

# CLI Reference

FortiSwitchOS 7.0.3



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## Change log

Date	Change Description
November 29, 2021	Initial version for FortiSwitchOS 7.0.3
December 7, 2021	<ul style="list-style-type: none"><li>• Changed <code>config system fsw-cloud</code> to <code>config system flan-cloud</code>.</li><li>• Changed <code>diagnose sys fsw-cloud-mgr</code> to <code>diagnose sys flan-cloud-mgr</code>.</li><li>• Changed <code>get system fsw-cloud</code> to <code>get system flan-cloud</code>.</li><li>• Changed <code>get system fsw-cloud-mgr connection-info</code> to <code>get system flan-cloud-mgr connection-info</code>.</li><li>• Updated the <code>config system global</code> command.</li><li>• Updated the <code>diagnose debug application</code> command.</li><li>• Updated the <code>diagnose certificate all</code> command.</li><li>• Updated the <code>diagnose certificate ca</code> command.</li></ul>

# Introduction

This manual describes the command line interface (CLI) commands for FortiSwitchOS.

## FortiSwitch models

This guide is applicable to all FortiSwitch models that are supported by FortiSwitchOS.

See the Release Notes for information about the software features supported on each of the models.

## How this guide is organized

The sections in this document describe the commands available for each of the top-level CLI commands:

- **config**—commands that allow you to configure various components of the FortiSwitch unit.
- **diagnose**—commands that help with troubleshooting.
- **execute**—commands that perform immediate operations.
- **get**—commands that provide information about FortiSwitch operation.
- **sleep**—command to add a delay in a script.

## Typographical conventions

This document uses the following typographical conventions:

Convention	Example
CLI input	<pre>config system dns     set primary &lt;address_ipv4&gt; end</pre>
CLI output	<pre>FG T-602803030703 # get system setting comments           : (No default) opmode             : nat</pre>
Emphasis	HTTP connections are <b>not</b> secure and can be intercepted by a third party.
File content	<pre>&lt;HTML&gt;&lt;HEAD&gt;&lt;TITLE&gt;Firewall Authentication&lt;/TITLE&gt;&lt;/HEAD&gt; &lt;BODY&gt;&lt;H4&gt;You must authenticate to use this service.&lt;/H4&gt;</pre>
Hyperlink	Visit the Fortinet Technical Support web site: <a href="https://support.fortinet.com/">https://support.fortinet.com/</a>

Convention	Example
<b>Keyboard entry</b>	Type a name for the remote VPN peer or client, such as <code>Central_Office_1</code> .
<b>Publication</b>	For details, see the <a href="#">FortiOS Administration Guide</a> .

## CLI command syntax conventions

This guide uses the following conventions to describe the syntax to use when entering commands in the Command Line Interface (CLI).

Convention	Description
Angle brackets <code>&lt; &gt;</code>	A word constrained by data type. To define acceptable input, the angled brackets contain a descriptive name followed by an underscore ( <code>_</code> ) and suffix that indicates the valid data type. For example: <code>&lt;retries_int&gt;</code> indicates that you should enter a number of retries, such as 5.
Data types include:	
<code>&lt;xxx_name&gt;</code>	A name referring to another part of the configuration, such as <code>policy_A</code> .
<code>&lt;xxx_index&gt;</code>	An index number referring to another part of the configuration, such as 0 for the first static route.
<code>&lt;xxx_pattern&gt;</code>	A regular expression or word with wild cards that matches possible variations, such as <code>*@example.com</code> to match all email addresses ending in <code>@example.com</code> .
<code>&lt;xxx_fqdn&gt;</code>	A fully qualified domain name (FQDN), such as <code>mail.example.com</code> .
<code>&lt;xxx_email&gt;</code>	An email address, such as <code>admin@mail.example.com</code> .
<code>&lt;xxx_ipv4&gt;</code>	An IPv4 address, such as <code>192.168.1.99</code> .
<code>&lt;xxx_v4mask&gt;</code>	A dotted decimal IPv4 netmask, such as <code>255.255.255.0</code> .
<code>&lt;xxx_ipv4mask&gt;</code>	A dotted decimal IPv4 address and netmask separated by a space, such as <code>192.168.1.99 255.255.255.0</code> .
<code>&lt;xxx_ipv4/mask&gt;</code>	A dotted decimal IPv4 address and CIDR-notation netmask separated by a slash, such as <code>192.168.1.99/24</code> .
<code>&lt;xxx_ipv6&gt;</code>	A colon ( <code>:</code> )-delimited hexadecimal IPv6 address, such as <code>3f2e:6a8b:78a3:0d82:1725:6a2f:0370:6234</code> .
<code>&lt;xxx_ipv6mask&gt;</code>	An IPv6 netmask, such as <code>/96</code> .
<code>&lt;xxx_ipv6/mask&gt;</code>	An IPv6 address and netmask separated by a space.



Convention	Description
<xxx_int>	An integer number that is <b>not</b> another data type, such as 15 for the number of minutes.
<xxx_url>	A uniform resource locator (URL) and its associated protocol and host name prefix, which together form a uniform resource identifier (URI), such as <code>http://www.fortinet./com/</code> .
Square brackets [ ]	A non-required word or series of words. For example: <code>[verbose {1   2   3}]</code> indicates that you can either omit or type both the <code>verbose</code> word and its accompanying option, such as: <code>verbose 3</code>
Curly braces { }	A word or series of words that is constrained to a set of options delimited by either vertical bars or spaces. You must enter at least one of the options, unless the set of options is surrounded by square brackets [ ].
Options delimited by vertical bars	Mutually exclusive options. For example: <code>{enable   disable}</code> indicates that you must enter either <code>enable</code> or <code>disable</code> but must not enter both.
Options delimited by spaces	Non-mutually exclusive options. For example: <code>{http https ping snmp ssh telnet}</code> indicates that you may enter all or a subset of those options, in any order, in a space-delimited list, such as: <code>ping https ssh</code>  <b>NOTE:</b> To change the options, you must re-type the entire list. For example, to add <code>snmp</code> to the previous example, you would type:  <code>ping https snmp ssh</code>  If the option adds to or subtracts from the existing list of options, instead of replacing it, or if the list is comma-delimited, the exception will be noted.

## Entering configuration data

The switch configuration is stored as a series of configuration settings in the FortiSwitchOS configuration database. To change the configuration, you can use the CLI to add, delete, or change configuration settings. These configuration changes are stored in the configuration database as they are made.

Individual settings in the configuration database can be text strings, numeric values, selections from a list of allowed options, or on/off (enable/disable).

You can use the “?” in three ways:

- Display brief help during command entry.
- Press the question mark (?) key at the command prompt to display a list of the commands available and a description of each command.

- Type a word or part of a word and then press the question mark (?) key to display a list of valid word completions or subsequent words.



If you need to enter the “?” character in a case where it is usually not allowed:

1. Press Ctrl+v.
2. Type the “?” character .

## Entering text strings (names)

Text strings are used to name entities in the configuration, such as an administrative user name. You can enter any character in a text string with the following exceptions (to prevent cross-site scripting vulnerabilities):

- " (double quote)
- & (ampersand)
- ' (single quote)
- < (less than)
- > (greater than)

You can determine the limit to the number of characters that are allowed in a text string by determining how many characters the CLI allows for a given name field. From the CLI, you can also use the `tree` command to view the number of characters that are allowed. For example, firewall address names can contain up to 64 characters. From the CLI, you can do the following to confirm that the firewall address name field allows 64 characters:

```
config firewall address
tree
  -- [address] --*name (64)
  |- subnet
  |- type
  |- start-ip
  |- end-ip
  |- fqdn (256)
  |- cache-ttl (0,86400)
  |- wildcard
  |- comment (64 xss)
  |- associated-interface (16)
  +- color (0,32)
```

**NOTE:** The `tree` command output also shows the number of characters allowed for other firewall address name settings. For example, the fully qualified domain name (`fqdn`) field can contain up to 256 characters.

## Entering numeric values

Numeric values are used to configure various sizes, rates, numeric addresses, or other numeric values. For example, a static routing priority of 10, a port number of 8080, or an IP address of 10.10.10.1. Numeric values can be entered as a series of digits without spaces or commas (for example, 10 or 64400), in dotted decimal format (for example, the IP address 10.10.10.1) or, as in the case of MAC or IPv6 addresses, separated by colons (for example, the MAC address 00:09:0F:B7:37:00). Most numeric values are standard base-10 numbers, but some fields (such as MAC addresses) require hexadecimal numbers.

CLI help includes information about allowed numeric value ranges. The CLI prevents you from entering invalid numbers.

# config

Use the `config` commands to configure various components of the FortiSwitch unit:

- [config log on page 19](#)
- [config router on page 26](#)
- [config switch on page 84](#)
- [config switch-controller global on page 160](#)
- [config system on page 161](#)
- [config user on page 226](#)

## config log

Use the `config log` commands to set the logging type, the logging severity level, and the logging location for the system:

- [config log custom-field on page 19](#)
- [config log eventfilter on page 20](#)
- [config log gui on page 21](#)
- [config log memory filter on page 21](#)
- [config log memory global-setting on page 22](#)
- [config log memory setting on page 22](#)
- [config log {syslogd | syslogd2 | syslogd3} filter on page 23](#)
- [config log {syslogd | syslogd2 | syslogd3} setting on page 24](#)

## config log custom-field

Use the following command to customize the log fields with a name and/or value. The custom name and/or value will appear in the log message.

### Syntax

```
config log custom-field
edit <id>
    set name <name>
    set value <int>
end
```

Variable	Description	Default
<id >	Enter the identification string for the custom log.	No default

Variable	Description	Default
name <name>	Enter a name to identify the log. You can use letters, numbers, ('_'), but no special characters such as the number symbol (#). The name cannot exceed 16 characters.	No default
value <int>	Enter an integer value to associate with the log.	No default

### Example

This example shows how to configure a customized field for a log:

```
config log custom-field
  edit 1
    set name "Vlan"
    set value 3
end
```

## config log eventfilter

Use this command to configure event logging.

### Syntax

```
config log eventfilter
  set event {enable | disable}
  set router {enable | disable}
  set system {enable | disable}
  set user {enable | disable}
end
```

Variable	Description	Default
event {enable   disable}	Log event messages. Must be enabled to make the following fields available.	enable
router {enable   disable}	Log router activity messages.	enable
system {enable   disable}	Log system activity messages.	enable
user {enable   disable}	Log user activity messages.	enable

### Example

This example shows how to configure event logging:

```
config log eventfilter
  set event enable
  set router enable
  set system enable
  set user enable
end
```

## config log gui

Use this command to select the device from which logs are displayed in the Web-based manager.

### Syntax

```
config log gui
    set log-device memory
end
```

Variable	Description	Default
log-device memory	Select the device from which logs are displayed in the Web-based manager. Currently, only logging to memory is available.	memory

## config log memory filter

Use this command to configure the filter for the memory buffer.

### Syntax

```
config log memory filter
    set severity {alert | critical | debug | emergency | error |
        information | notification | warning}
end
```

Variable	Description	Default
severity {alert   critical   debug   emergency   error   information   notification   warning}	Select the logging severity level. The system logs all messages at and above the logging severity level you select. For example, if you select <code>error</code> , the system logs <code>error</code> , <code>critical</code> , <code>alert</code> and <code>emergency</code> level messages. <ul style="list-style-type: none"><li>• <code>emergency</code> — The system is unusable.</li><li>• <code>alert</code> — Immediate action is required.</li><li>• <code>critical</code> — Functionality is affected.</li><li>• <code>error</code> — An erroneous condition exists and functionality is probably affected.</li><li>• <code>warning</code> — Functionality might be affected.</li><li>• <code>notification</code> — Information about normal events.</li><li>• <code>information</code> — General information about system operations.</li><li>• <code>debug</code> — Information used for diagnosing or debugging the system.</li></ul>	information

### Example

This example shows how to configure the memory log filter:

```
config log memory filter
    set severity alert
```

```
end
```

## config log memory global-setting

Use this command to configure log threshold warnings, as well as the maximum buffer lines, for the FortiSwitch system memory.

The FortiSwitch system memory has a limited capacity and displays only the most recent log entries. Traffic logs are not stored in the memory buffer, due to the high volume of traffic information. After all available memory is used, by default, the system begins to overwrite the oldest log messages. All log entries are deleted when the system restarts.

### Syntax

```
config log memory global-setting
  set full-final-warning-threshold <int>
  set full-first-warning-threshold <int>
  set full-second-warning-threshold <int>
  set hourly-upload {disable | enable}
  set max-size <int>
end
```

Variable	Description	Default
full-final-warning-threshold <int>	Enter to configure the final warning before reaching the threshold. You can enter a number between 3 and 100.	95
full-first-warning-threshold <int>	Enter to configure the first warning before reaching the threshold. You can enter a number between 1 and 98.	75
full-second-warning-threshold <int>	Enter to configure the second warning before reaching the threshold. You can enter a number between 2 and 99.	90
hourly-upload {disable   enable}	Enter <code>enable</code> to have log uploads occur hourly.	disable
max-size <int>	Enter the maximum size of the memory buffer log, in bytes.	98304

### Example

This example shows how to configure log threshold warnings and the maximum buffer lines:

```
config log memory global-setting
  set full-final-warning-threshold 45
  set full-first-warning-threshold 25
  set full-second-warning-threshold 45
  set hourly-upload enable
  set max-size 12288
end
```

## config log memory setting

Use this command to configure log settings for logging to the system memory.

The system memory has a limited capacity and only displays the most recent log entries. Traffic logs are not stored in the memory buffer, due to the high volume of traffic information. After all available memory is used, by default, the system begins to overwrite the oldest messages. All log entries are deleted when the system restarts.

## Syntax

```
config log memory setting
    set status {disable | enable}
    set diskfull overwrite
end
```

Variable	Description	Default
status {disable   enable}	Enter <code>enable</code> to enable logging to system memory.	disable
diskfull overwrite	Overwrite the oldest log when the log device is full.	No default

## Example

This example shows how to configure log settings:

```
config log memory setting
    set status enable
    set diskfull overwrite
end
```

## config log {syslogd | syslogd2 | syslogd3} filter

Use this command to configure log filter options. Log filters define the types of log messages sent to each log location.

## Syntax

```
config log {syslogd | syslogd2 | syslogd3} filter
    set severity {alert | critical | debug | emergency | error |
        information | notification | warning}
end
```

Variable	Description	Default
severity {alert   critical   debug   emergency   error   information   notification   warning}	<p>Select the logging severity level. The system logs all messages at and above the logging severity level you select. For example, if you select <code>error</code>, the system logs <code>error</code>, <code>critical</code>, <code>alert</code> and <code>emergency</code> level messages.</p> <ul style="list-style-type: none"> <li><code>emergency</code> — The system is unusable.</li> <li><code>alert</code> — Immediate action is required.</li> <li><code>critical</code> — Functionality is affected.</li> <li><code>error</code> — An erroneous condition exists and functionality is probably affected.</li> <li><code>warning</code> — Functionality might be affected.</li> <li><code>notification</code> — Information about normal events.</li> <li><code>information</code> — General information about system</li> </ul>	information

Variable	Description	Default
	operations. <ul style="list-style-type: none"> <li>• <code>debug</code> — Information used for diagnosing or debugging the system.</li> </ul>	
<code>status {enable   disable}</code>	Enable or disable remote syslog logging.	<code>disable</code>

## Example

This example shows how to configure log filter options:

```
config log syslogd filter
    set severity information
end
```

## config log {syslogd | syslogd2 | syslogd3} setting

Use this command to configure log settings for logging to the system memory.

The system memory has a limited capacity and only displays the most recent log entries. Traffic logs are not stored in the memory buffer, due to the high volume of traffic information. After all available memory is used, by default, the system begins to overwrite the oldest messages. All log entries are deleted when the system restarts.

## Syntax

```
config log {syslogd | syslogd2 | syslogd3} setting
    set status {disable | enable}
    set enc-algorithm {disable | high | high-medium | low}
    set certificate <certificate_name>
    set server <server_name>
    set mode {legacy-reliable | reliable | udp}
    set port <port_number>
    set csv {enable | disable}
    set facility {alert | audit | auth | authpriv | clock | cron | daemon | ftp | kernel |
        local0 | local1 | local2 | local3 | local4 | local5 | local6 | local7 | lpr | mail |
        news | ntp | syslog | user | uucp}
    set source-ip <IPv4_address>
end
```

Variable	Description	Default
<code>status {disable   enable}</code>	Enter <code>enable</code> to start logging to system memory.	<code>disable</code>
<code>enc-algorithm {disable   high   high-medium   low}</code>	Set to <code>high</code> , <code>high-medium</code> , or <code>low</code> to specify which encryption algorithm that SSL communication uses for reliable syslog. Set to <code>disable</code> if you do not want to use reliable syslog.	<code>disable</code>
<code>certificate &lt;certificate_name&gt;</code>	Specify the certificate to use to communicate with the syslog server.	No default



Variable	Description	Default
server <server_name>	This field is available with <code>status</code> is set to <code>enable</code> . Enter the address of the remote syslog server.	No default
mode {legacy-reliable   reliable   udp}	Set to <code>legacy-reliable</code> to use RFC 3195 for reliable syslog. Set to <code>reliable</code> to use RFC 6587 for reliable syslog. Set to <code>udp</code> to use syslog over UDP.  This field is available with <code>status</code> is set to <code>enable</code> . This field was previously named <code>reliable</code> .	udp
port <port_number>	Set the port number that the server listens to.  If the mode is set to <code>reliable</code> , the default port is 514. If the mode is set to <code>legacy-reliable</code> , the default port is 601. If the mode is set to <code>udp</code> , the default port is 6514.  This field is available with <code>status</code> is set to <code>enable</code> .	514
csv {enable   disable}	Enable or disable comma-separated values.  This field is available with <code>status</code> is set to <code>enable</code> .	disable
set facility {alert   audit   auth   authpriv   clock   cron   daemon   ftp   kernel   local0   local1   local2   local3   local4   local5   local6   local7   lpr   mail   news   ntp   syslog   user   uucp}	This field is available with <code>status</code> is set to <code>enable</code> . Select the facility for remote syslog: <ul style="list-style-type: none"> <li>• <code>alert</code>—Use the log alert.</li> <li>• <code>audit</code>—Use the log audit.</li> <li>• <code>auth</code>—Use the security/authorization messages.</li> <li>• <code>authpriv</code>—Use the private security/authorization messages.</li> <li>• <code>clock</code>—Use the clock daemon.</li> <li>• <code>cron</code>—Use the clock daemon.</li> <li>• <code>daemon</code>—Use the system daemon.</li> <li>• <code>ftp</code>—Use the FTP daemon.</li> <li>• <code>kernel</code>—Use kernel messages.</li> <li>• <code>local0</code>—Reserved for local use.</li> <li>• <code>local1</code>—Reserved for local use.</li> <li>• <code>local2</code>—Reserved for local use.</li> <li>• <code>local3</code>—Reserved for local use.</li> <li>• <code>local4</code>—Reserved for local use.</li> <li>• <code>local5</code>—Reserved for local use.</li> <li>• <code>local6</code>—Reserved for local use.</li> <li>• <code>local7</code>—Reserved for local use.</li> <li>• <code>lpr</code>—Use the line printer subsystem.</li> <li>• <code>mail</code>—Use the mail system.</li> <li>• <code>news</code>—Use the network news subsystem.</li> <li>• <code>ntp</code>—Use the NTP system.</li> <li>• <code>syslog</code>—Use memssages generated internally by the syslog daemon.</li> <li>• <code>user</code>—Use random user-level messages.</li> <li>• <code>uucp</code>—Use the network news subsystem.</li> </ul>	local7

Variable	Description	Default
source-ip <IPv4_address>	This field is available with <code>status</code> is set to <code>enable</code> . Enter the source IPv4 address of the syslog.	0.0.0.0

## Example

This example shows how to configure log settings:

```
config log syslogd setting
    set status enable
    set server "1.2.3.4"
    set port 5
end
```

## config router

Use the `config router` commands to configure options related to routing protocols and packet forwarding:

- [config router access-list on page 26](#)
- [config router access-list6 on page 28](#)
- [config router aspath-list on page 29](#)
- [config router bgp on page 29](#)
- [config router community-list on page 44](#)
- [config router isis on page 45](#)
- [config router key-chain on page 51](#)
- [config router multicast on page 52](#)
- [config router multicast-flow on page 53](#)
- [config router ospf on page 54](#)
- [config router ospf6 on page 62](#)
- [config router policy on page 66](#)
- [config router prefix-list on page 68](#)
- [config router prefix-list6 on page 69](#)
- [config router rip on page 70](#)
- [config router ripng on page 74](#)
- [config router route-map on page 76](#)
- [config router setting on page 80](#)
- [config router static on page 81](#)
- [config router static6 on page 82](#)
- [config router vrf on page 84](#)

## config router access-list

Use this command to configure an IPv4 access list. An access list is a list of IP addresses and the action to take for each one. Access lists provide basic route and network filtering.

## Syntax

```
config router access-list
  edit <list_str>
    set comments <comment_str>
    config rule
      edit <rule_int>
        set action {deny | permit}
        set prefix {<xxx.xxx.xxx.xxx> <xxx.xxx.xxx.xxx> | any}
        set wildcard <IP_address>
        set exact-match {enable | disable}
      end
    end
  end
```

Variable	Description	Default
<list_str>	Enter the name of the access list. <ul style="list-style-type: none"> <li>If the name is a number in the range of 1-99, you can define Cisco-style wildcard filter criteria with the <code>set wildcard &lt;ip&gt;</code> command.</li> <li>If the name has at least one alphabetic character, you can set the prefix to define regular filter criteria using the <code>set prefix {&lt;xxx.xxx.xxx.xxx&gt; &lt;xxx.xxx.xxx.xxx&gt;   any}</code> command.</li> </ul>	No default
comments <comment_str>	Enter a descriptive comment.	No default
<b>config rule</b>	Configure the access-list rule.	
<rule_int>	The rule identifier.	No default
action {deny   permit}	Set whether the rule allows or denies the IPv4 address.	permit
prefix {<xxx.xxx.xxx.xxx> <xxx.xxx.xxx.xxx>   any}	Set the prefix to define regular filter criteria, such as <code>any</code> or subnets. <b>NOTE:</b> The access list name must contain at least one alphabetic character.	any
wildcard <IP_address>	Define Cisco-style wildcard filter criteria. <b>NOTE:</b> The access list name must be a digit in the range of 1-99. Strings are not supported.	No default
exact-match {enable   disable}	Set whether the rule looks for an exact match with the value in the prefix field.	disable

## Example

This example shows how to configure an access list:

```
config router access-list
  edit mylist
    set comments "access list for RIP 1"
    config rule
      edit 1
        set action permit
        set prefix xxx.xx.xx.xx xxx.xxx.xxx.x
      end
    end
  end
```

```
end
```

## config router access-list6

Use this command to configure an IPv6 access list. An access list is a list of IP addresses and the action to take for each one. Access lists provide basic route and network filtering.

### Syntax

```
config router access-list6
  edit <name_of_IPv6_access_list>
    set comments <string>
    config rule
      edit <rule_ID>
        set action {deny | permit}
        set prefix6 {<xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx> | any}
        set exact-match {enable | disable}
      next
    end
  end
```

Variable	Description	Default
<name_of_IPv6_access_list>	Enter the name of the IPv6 access list.	No default
comments <string>	Enter a descriptive comment.	No default
<b>config rule</b>	Configure the IPv6 access-list rule.	
<rule_ID>	The rule identifier.	No default
action {deny   permit}	Set whether the rule allows or denies the IPv6 address.	permit
prefix6 {<xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx>   any}	Set the IPv6 prefix to define regular filter criteria, such as <code>any</code> or <code>X:X::X:X/M</code> .	any
exact-match {enable   disable}	Set whether the rule looks for an exact match with the value in the prefix field.	disable

### Example

This example shows how to configure an IPv6 access list:

```
config router access-list6
  edit accesslist1
    set comments "IPv6 access list"
    config rule
      edit 1
        set action permit
        set prefix6 fe80::a5b:eff:fe1:95e5
        set exact-match disable
      next
    end
  end
```

## config router aspath-list

Use this command to set or unset Border Gateway Protocol (BGP) AS-path list parameters. By default, BGP uses an ordered list of Autonomous System (AS) numbers to describe the route that a packet takes to reach its destination. A list of these AS numbers is called the AS path. You can filter BGP routes using AS path lists.

Use the `config router aspath-list` command to define an access list that examines the AS\_PATH attributes of BGP routes to match routes. Each entry in the list defines a rule for matching and selecting routes based on the setting of the AS\_PATH attribute.

### Syntax

```
config router aspath-list
  edit <AS_path_list_name>
    config rule
      edit <rule_identifier>
        set action {deny | permit}
        set regexp <string>
      end
    end
  end
```

Variable	Description	Default
<AS_path_list_name>	Enter the name of the AS path list.	No default
<b>config rule</b>	Configure the AS path list rule.	
<rule_identifier>	Enter a rule identifier.	No default
action {deny   permit}	Set whether to permit or deny route-based operations, based on the route's AS_PATH attribute.	No default
regexp <string>	Specify the regular expression that will be compared to the AS_PATH attribute (for example, ^730\$). The value is used to match AS numbers. Enclose a complex regular expression value within double-quotation marks.	No default

## config router bgp

Use this command to configure Border Gateway Protocol version-4 (BGP-4) routing parameters. BGP can be used to perform Classless Interdomain Routing (CIDR) and to route traffic between different autonomous systems or domains using an alternative route if a link between a FortiSwitch unit and a BGP peer (such as an ISP router) fails.

The following RFCs are supported:

- RFC1771—A Border Gateway Protocol 4 (BGP-4)
- RFC1965—Autonomous System Confederations for BGP
- RFC1997—BGP Communities Attribute
- RFC2545—Use of BGP-4 Multiprotocol Extensions for IPv6 Inter-Domain Routing
- RFC2796—BGP Route Reflection An alternative to full mesh IBGP
- RFC2858—Multiprotocol Extensions for BGP-4
- RFC2842—Capabilities Advertisement with BGP-4
- RFC2439—BGP Route Flap Damping

## Syntax

```

config router bgp
  set as <MANDATORY_router_AS_number>
  set router-id <MANDATORY_IP_address>
  set keepalive-timer <0-65535>
  set holdtime-timer <0, 3-65535>
  set always-compare-med {disable | enable}
  set bestpath-as-path-ignore {disable | enable}
  set bestpath-cmp-confed-aspath {disable | enable}
  set bestpath-cmp-routerid {disable | enable}
  set bestpath-med-confed {disable | enable}
  set bestpath-med-missing-as-worst {disable | enable}
  set client-to-client-reflection {disable | enable}
  set dampening {disable | enable}
    set dampening-reachability-half-life <1-45>
    set dampening-reuse <1-20000>
    set dampening-suppress <1-20000>
    set dampening-max-suppress-time <1-255>
  set deterministic-med {disable | enable}
  set enforce-first-as {disable | enable}
  set fast-external-failover {disable | enable}
  set log-neighbour-changes {disable | enable}
  set cluster-id <IP_address>
  set confederation-identifier <1-4294967295>
  set default-local-preference <0-4294967295>
  set scan-time <5-60>
  set maximum-paths-ebgp <1-64>
  set bestpath-aspath-multipath-relax {disable | enable}
  set maximum-paths-ibgp <1-64>
  set distance-external <1-255>
  set distance-internal <1-255>
  set distance-local <1-255>
  set graceful-stalepath-time <1-3600>
  config admin-distance
    edit <identifier>
      set distance <1-255>
      set neighbour-prefix <IP_address_netmask>
      set route-list <string>
    end
  config aggregate-address
    edit <identifier>
      set as-set {disable | enable}
      set prefix <IPv4_address_netmask>
      set summary-only {disable | enable}
    end
  config aggregate-address6
    edit <identifier>
      set as-set {disable | enable}
      set prefix <IPv6_address_netmask>
      set summary-only {disable | enable}
    end
  config neighbor
    edit "<IPv4_IPv6_address>"
      set advertisement-interval <0-600>
      set allowas-in-enable {disable | enable}
      set allowas-in <1-10>

```

```
set allowas-in-enable6 {disable | enable}
  set allowas-in6 <1-10>
set attribute-unchanged {as-path | MED | next-hop}
set attribute-unchanged6 {as-path | MED | next-hop}
set activate {disable | enable}
set activate6 {disable | enable}
set bfd {disable | enable}
set capability-dynamic {disable | enable}
set capability-orf {both | none | receive | send}
set capability-orf6 {both | none | receive | send}
set capability-default-originate {disable | enable}
set capability-default-originate6 {disable | enable}
set dont-capability-negotiate {disable | enable}
set ebgp-enforce-multihop {disable | enable}
  set ebgp-multihop-ttl <1-255>
  set ebgp-ttl-security-hops <1-254>
set next-hop-self {disable | enable}
set next-hop-self6 {disable | enable}
set override-capability {disable | enable}
set passive {disable | enable}
set remove-private-as {disable | enable}
set remove-private-as6 {disable | enable}
set route-reflector-client {disable | enable}
set route-reflector-client6 {disable | enable}
set route-server-client {disable | enable}
set route-server-client6 {disable | enable}
set shutdown {disable | enable}
set soft-reconfiguration {disable | enable}
set soft-reconfiguration6 {disable | enable}
set as-override {disable | enable}
set as-override6 {disable | enable}
set strict-capability-match {disable | enable}
set description <string>
set distribute-list-in <string>
set distribute-list-in6 <string>
set distribute-list-out <string>
set distribute-list-out6 <string>
set filter-list-in <string>
set filter-list-in6 <string>
set filter-list-out <string>
set filter-list-out6 <string>
set interface <interface_name>
set maximum-prefix <1-4294967295>
set maximum-prefix6 <1-4294967295>
set prefix-list-in <string>
set prefix-list-in6 <string>
set prefix-list-out <string>
set prefix-list-out6 <string>
set remote-as <MANDATORY_1-4294967295>
set route-map-in <string>
set route-map-in6 <string>
set route-map-out <string>
set route-map-out6 <string>
set send-community {both | disable | extended | standard}
set send-community6 {both | disable | extended | standard}
set keep-alive-timer <0-65535>
set holdtime-timer <0, 3-65535>
```

```

        set connect-timer <0-65535>
        set unsuppress-map <string>
        set unsuppress-map6 <string>
        set update-source {interface_name}
        set weight <0-65535>
    end
config network
    edit <identifier>
        set backdoor {disable | enable}
        set prefix <IPv4_address_netmask>
        set route-map <string>
    end
config network6
    edit <identifier>
        set backdoor {disable | enable}
        set prefix6 <IPv6_address_netmask>
        set route-map <string>
    end
config redistribute {connected | isis | ospf | rip | static}
    set status {disable | enable}
    set route-map <string>
end
config redistribute6 {connected | isis | ospf | rip | static}
    set status {disable | enable}
    set route-map <string>
end
end

```

Variable	Description	Default
as <MANDATORY_router_AS_number>	Mandatory. Enter an integer to specify the local autonomous system (AS) number of the FortiSwitch unit. The range is from 1 to 4 294 967 295. A value of 0 disables BGP (disabled by default).	0
router-id <MANDATORY_IP_address>	Mandatory. Specify a fixed identifier for the FortiSwitch unit. A value of 0.0.0.0 is not allowed.	0.0.0.0
keepalive-timer <0-65535>	How often (in seconds) the router sends out keepalive messages to neighbor routers to maintain those sessions.	60
holdtime-timer <0, 3-65535>	How long (in seconds) the router will wait for a keepalive message before declaring a router offline. A shorter time will find an off-line router faster.	180
always-compare-med {disable   enable}	Always compare Multi-Exit Discriminator (MED).	disable



Variable	Description	Default
bestpath-as-path-ignore {disable   enable}	AS_PATH is the BGP attribute that keeps track of each AS that a route advertisement has passed through; it helps prevent routing loops. Enable this option if you want BGP to not use the best AS path. Disable this option if you want BGP to use the best AS path.	disable
bestpath-cmp-confed-aspath {disable   enable}	Enable or disable the comparison of the AS_CONFED_SEQUENCE attribute, which defines an ordered list of AS numbers representing a path from the FortiSwitch unit through autonomous systems within the local confederation.	disable
bestpath-cmp-routerid {disable   enable}	Compare router ID for identical external BGP (EBGP) paths.	disable
bestpath-med-confed {disable   enable}	Compare MED among confederation paths.	disable
bestpath-med-missing-as-worst {disable   enable}	Enable or disable (by default) treating any confederation path with a missing MED metric as the least preferred path.	disable
client-to-client-reflection {disable   enable}	Enable (by default) or disable client-to-client route reflection between internal BGP (IBGP) peers.	enable
dampening {disable   enable}	Enable or disable (by default) route-flap dampening on all BGP routes. A flapping route is unstable and continually transitions down and up (see RFC 2439).	disable
dampening-reachability-half-life <1-45>	If you enable dampening, set the maximum time that a route can be suppressed (in minutes). A route can continue to accumulate penalties while it is suppressed. However, the route cannot be suppressed longer than the maximum time.	15
dampening-reuse <1-20000>	If you enable dampening, set a dampening reuse limit based on the number of accumulated penalties. If the penalty assigned to a flapping route decreases enough to fall below the specified limit, the route is not suppressed.	750
dampening-suppress <1-20000>	If you enable dampening, set a dampening-suppression limit based on the number of accumulated penalties. A route is suppressed (not advertised) when its penalty exceeds the specified limit.	2000

Variable	Description	Default
dampening-max-suppress-time <1-255>	If you enable dampening, set the maximum time that a route can be suppressed. A route can continue to accumulate penalties while it is suppressed. However, the route cannot be suppressed longer than the maximum time.	60
deterministic-med {disable   enable}	Enforce deterministic comparison of MED.	disable
enforce-first-as {disable   enable}	Enforce first AS for EBGp routes.	disable
fast-external-failover {disable   enable}	Reset peer BGP session if link goes down.	enable
log-neighbour-changes {disable   enable}	Enable or disable logging of BGP neighbor's changes.	enable
cluster-id <IP_address>	Route reflector cluster ID.	0.0.0.0
confederation-identifier <1-4294967295>	Confederation identifier.	0
default-local-preference <0-4294967295>	Default local preference.	100
scan-time <5-60>	Background scanner interval (seconds).	60
maximum-paths-ebgp <1-64>	Set the maximum number of paths for equal-cost multi-path (ECMP) routing using the External Border Gateway Protocol (EBGP).	1
bestpath-aspath-multipath-relax {disable   enable}	Enable or disable load sharing across routes that are the same length but have different autonomous system (AS) paths.	disable
maximum-paths-ibgp <1-64>	Set the maximum number of paths for equal-cost multi-path (ECMP) routing using the Internal Border Gateway Protocol (IBGP).	1
distance-external <1-255>	Distance for routes external to the AS.	20
distance-internal <1-255>	Distance for routes internal to the AS.	200
distance-local <1-255>	Distance for routes local to the AS.	200
graceful-stalepath-time <1-3600>	Time to hold stale paths of restarting neighbor (sec).	360
<b>config admin-distance</b>	Configure administrative distance modifications.	
<identifier>	Enter an identifier to set administrative distance modifications for BGP routes.	No default
distance <1-255>	Set the administrative distance to apply.	0

Variable	Description	Default
neighbour-prefix <IP_address_netmask>	Neighbor address prefix. Enter the class IP address and netmask with correction.	0.0.0.0 0.0.0.0
route-list <string>	The access list of routes this distance will be applied to.	No default
<b>config aggregate-address</b>	Configure the table of BGP IPv4 aggregate addresses.	
<identifier>	Enter a BGP aggregate entry in the routing table. When you aggregate routes, routing becomes less precise because path details are not readily available for routing purposes. The aggregate address represents addresses in several autonomous systems. Aggregation reduces the length of the network mask until it masks only the bits that are common to all of the addresses being summarized.	No default
as-set {disable   enable}	Enable or disable the generation of an unordered list of AS numbers to include in the path information.	disable
prefix <IPv4_address_netmask>	Aggregate IPv4 prefix. The prefix 0.0.0.0 0.0.0.0 is not allowed.	No default
summary-only {disable   enable}	Enable or disable filtering more specific routes from updates.	disable
<b>config aggregate-address6</b>	Configure the table of BGP IPv6 aggregate addresses.	
<identifier>	Enter a BGP aggregate entry in the routing table. When you aggregate routes, routing becomes less precise because path details are not readily available for routing purposes. The aggregate address represents addresses in several autonomous systems. Aggregation reduces the length of the network mask until it masks only the bits that are common to all of the addresses being summarized.	No default
as-set {disable   enable}	Enable or disable the generation of an unordered list of AS numbers to include in the path information.	disable
prefix6 <IPv6_address_netmask>	Aggregate IPv6 prefix.	No default
summary-only {disable   enable}	Enable or disable filtering more specific routes from updates.	disable
<b>config neighbor</b>	Configure the BGP neighbor table.	

Variable	Description	Default
<IPv4_IPv6_address>	Enter the IPv4 or IPv6 address of the BGP neighbor.	No default
advertisement-interval <0-600>	Set the minimum amount of time (in seconds) that the FortiSwitch unit waits before sending a BGP routing update to the BGP neighbor.	30
allowas-in-enable {disable   enable}	Enable to allow my AS-in-AS path (for IPv4).	disable
allowas-in <1-10>	If you enable <code>allowas-in-enable</code> , set the maximum number of occurrences of my AS numbers allowed (for IPv4).	No default
allowas-in-enable6 {disable   enable}	Enable to allow my AS-in-AS path (for IPv6).	disable
allowas-in6 <1-10>	If you enable <code>allowas-in-enable6</code> , set the maximum number of occurrences of my AS numbers allowed (for IPv6).	No default
attribute-unchanged {as-path   MED   next-hop}	Propagate unchanged BGP attributes to the BGP neighbor using one of the following methods (for IPv4): <ul style="list-style-type: none"> <li>To advertise unchanged next-hop attributes, select <code>as-path</code>.</li> <li>To advertise unchanged MULTI_EXIT_DISC attributes, select <code>med</code>.</li> <li>To keep the next-hop attribute as is, select <code>next-hop</code>.</li> <li>An empty set (default) is a supported value.</li> </ul>	No default
attribute-unchanged6 {as-path   MED   next-hop}	Propagate unchanged BGP attributes to the BGP neighbor using one of the following methods (for IPv6): <ul style="list-style-type: none"> <li>To advertise unchanged next-hop attributes, select <code>as-path</code>.</li> <li>To advertise unchanged MULTI_EXIT_DISC attributes, select <code>med</code>.</li> <li>To keep the next-hop attribute as is, select <code>next-hop</code>.</li> <li>An empty set (default) is a supported value.</li> </ul>	No default
activate {disable   enable}	Enable address family IPv4 for this neighbor.	enable
activate6 {disable   enable}	Enable address family IPv6 for this neighbor.	enable
bfd {disable   enable}	Enable BFD for this neighbor.	disable
capability-dynamic {disable   enable}	Advertise dynamic capability to this neighbor.	disable
capability-orf {both   none   receive   send}	Enable advertising of Outbound Routing Filter (ORF) prefix-list capability to the BGP neighbor using one of the following methods (for IPv4):	none

Variable	Description	Default
	<ul style="list-style-type: none"> <li><code>none</code>: disable the advertising of ORF prefix-list capability.</li> <li><code>receive</code>: enable receive capability.</li> <li><code>send</code>: enable send capability.</li> <li><code>both</code>: enable send and receive capability.</li> </ul>	
<code>capability-orf6 {both   none   receive   send}</code>	Enable advertising of ORF prefix-list capability to the BGP neighbor using one of the following methods (for IPv6): <ul style="list-style-type: none"> <li><code>none</code>: disable the advertising of ORF prefix-list capability.</li> <li><code>receive</code>: enable receive capability.</li> <li><code>send</code>: enable send capability.</li> <li><code>both</code>: enable send and receive capability.</li> </ul>	<code>none</code>
<code>capability-default-originate {disable   enable}</code>	Advertise the default IPv4 route to this neighbor.	<code>disable</code>
<code>capability-default-originate6 {disable   enable}</code>	Advertise the default IPv6 route to this neighbor.	<code>disable</code>
<code>dont-capability-negotiate {disable   enable}</code>	Do not negotiate capabilities with this neighbor.	<code>disable</code>
<code>ebgp-enforce-multihop {disable   enable}</code>	Enable or disable the allowance of multi-hop EBGp neighbors.	<code>disable</code>
<code>ebgp-multihop-ttl &lt;1-255&gt;</code>	If you enable <code>ebgp-enforce-multihop</code> , define a TTL value for BGP packets sent to the BGP neighbor.	<code>255</code>
<code>ebgp-ttl-security-hops &lt;1-254&gt;</code>	If you enable <code>ebgp-enforce-multihop</code> , specify the maximum number of hops to the EBGp peer.	<code>0</code>
<code>next-hop-self {disable   enable}</code>	Enable or disable IPv4 next-hop calculation for this neighbor.	<code>disable</code>
<code>next-hop-self6 {disable   enable}</code>	Enable or disable IPv6 next-hop calculation for this neighbor.	<code>disable</code>
<code>override-capability {disable   enable}</code>	Enable or disable the overriding of the result of the capability negotiation.	<code>disable</code>
<code>passive {disable   enable}</code>	Enable or disable sending of open messages to this neighbor.	<code>disable</code>
<code>remove-private-as {disable   enable}</code>	Enable or disable the removal of the private AS number from the IPv4 outbound updates.	<code>disable</code>
<code>remove-private-as6 {disable   enable}</code>	Enable or disable the removal of the private AS number from the IPv6 outbound updates.	<code>disable</code>

Variable	Description	Default
route-reflector-client {disable   enable}	Enable or disable the IPv4 AS route reflector client.	disable
route-reflector-client6 {disable   enable}	Enable or disable the IPv6 AS route reflector client.	disable
route-server-client {disable   enable}	Enable or disable the IPv4 AS route server client.	disable
route-server-client6 {disable   enable}	Enable or disable the IPv6 AS route server client.	disable
shutdown {disable   enable}	Enable or disable the shutting down of this neighbor.	disable
soft-reconfiguration {disable   enable}	Enable or disable the allowance of IPv4 inbound soft reconfiguration.	disable
soft-reconfiguration6 {disable   enable}	Enable or disable the allowance of IPv6 inbound soft reconfiguration.	disable
as-override {disable   enable}	Enable or disable the replacement of the peer AS with own AS for IPv4.	disable
as-override6 {disable   enable}	Enable or disable the replacement of the peer AS with own AS for IPv6.	disable
strict-capability-match {disable   enable}	Enable or disable strict capability matching.	disable
description <string>	Enter a description of this neighbor.	No default
distribute-list-in <string>	Limit route updates from the BGP neighbor based on the Network Layer Reachability Information (NLRI) prefixes defined in the specified IPv4 access list. You must create the access list before it can be selected here. See <a href="#">config router access-list on page 26</a> .	No default
distribute-list-in6 <string>	Limit route updates from the BGP neighbor based on the Network Layer Reachability Information (NLRI) prefixes defined in the specified IPv6 access list. You must create the access list before it can be selected here. See <a href="#">config router access-list6 on page 28</a> .	No default
distribute-list-out <string>	Limit route updates to the BGP neighbor based on the NLRI defined in the specified IPv4 access list. You must create the access list before it can be selected here. See <a href="#">config router access-list on page 26</a> .	No default

Variable	Description	Default
distributed-list-out6 <string>	Limit route updates to the BGP neighbor based on the NLRI defined in the specified IPv6 access list. You must create the access list before it can be selected here. See <a href="#">config router access-list6 on page 28</a> .	No default
filter-list-in <string>	BGP AS path filter for IPv4 inbound routes. You must create the AS path list before it can be selected here. See <a href="#">config router aspath-list on page 29</a> .	No default
filter-list-in6 <string>	BGP AS path filter for IPv6 inbound routes. You must create the AS path list before it can be selected here. See <a href="#">config router aspath-list on page 29</a> .	No default
filter-list-out <string>	BGP AS path filter for IPv4 outbound routes. You must create the AS path list before it can be selected here. See <a href="#">config router aspath-list on page 29</a> .	No default
filter-list-out6 <string>	BGP AS path filter for IPv6 outbound routes. You must create the AS path list before it can be selected here. See <a href="#">config router aspath-list on page 29</a> .	No default
interface <interface_name>	Set the interface.	No default
maximum-prefix <1-4294967295>	Enter the maximum number of IPv4 prefixes to accept from this peer.	unset
maximum-prefix6 <1-4294967295>	Enter the maximum number of IPv6 prefixes to accept from this peer.	unset
prefix-list-in <string>	Limit route updates from a BGP neighbor based on the Network Layer Reachability Information (NLRI) in the specified IPv4 prefix list. The prefix list defines the NLRI prefix and length advertised in a route. You must create the prefix list before it can be selected here. See <a href="#">config router prefix-list on page 68</a> .	No default
prefix-list-in6 <string>	Limit route updates from a BGP neighbor based on the Network Layer Reachability Information (NLRI) in the specified IPv6 prefix list. The prefix list defines the NLRI prefix and length advertised in a route. You must create the prefix list before it can be selected here. See <a href="#">config router prefix-list6 on page 69</a> .	No default

Variable	Description	Default
prefix-list-out <string>	Limit route updates to a BGP neighbor based on the NLRI in the specified IPv4 prefix list. The prefix list defines the NLRI prefix and length advertised in a route. You must create the prefix list before it can be selected here. See <a href="#">config router prefix-list on page 68</a> .	No default
prefix-list-out6 <string>	Limit route updates to a BGP neighbor based on the NLRI in the specified IPv6 prefix list. The prefix list defines the NLRI prefix and length advertised in a route. You must create the prefix list before it can be selected here. See <a href="#">config router prefix-list6 on page 69</a> .	No default
remote-as <MANDATORY_1-4294967295>	Mandatory. Adds a BGP neighbor to the FortiSwitch configuration and sets the AS number of the neighbor. If the number is identical to the AS number of the FortiSwitch unit, the FortiSwitch unit communicates with the neighbor using internal BGP (IBGP). Otherwise, the neighbor is an external peer, and the FortiSwitch unit uses EBGp to communicate with the neighbor.	0
route-map-in <string>	Limit route updates or change the attributes of route updates from the BGP neighbor according to the specified IPv4 route map. Only the route maps for this protocol are listed. You must create the route map before it can be selected here. See <a href="#">config router route-map on page 76</a> .	No default
route-map-in6 <string>	Limit route updates or change the attributes of route updates from the BGP neighbor according to the specified IPv6 route map. Only the route maps for this protocol are listed. You must create the route map before it can be selected here. See <a href="#">config router route-map on page 76</a> .	No default
route-map-out <string>	Limit route updates or change the attributes of route updates to the BGP neighbor according to the specified IPv4 route map. Only the route maps for this protocol are listed. You must create the route map before it can be selected here. See <a href="#">config router route-map on page 76</a> .	No default



Variable	Description	Default
route-map-out6 <string>	Limit route updates or change the attributes of route updates to the BGP neighbor according to the specified IPv6 route map. Only the route maps for this protocol are listed. You must create the route map before it can be selected here. See <a href="#">config router route-map on page 76</a> .	No default
send-community {both   disable   extended   standard}	Enable sending the COMMUNITY attribute to the BGP neighbor using one of the following methods (for IPv4): <ul style="list-style-type: none"> <li>• <code>standard</code>: advertise standard capabilities</li> <li>• <code>extended</code>: advertise extended capabilities</li> <li>• <code>both</code>: advertise extended and standard capabilities (default)</li> <li>• <code>disable</code>: disable the advertising of the COMMUNITY attribute</li> </ul>	both
send-community6 {both   disable   extended   standard}	Enable sending the COMMUNITY attribute to the BGP neighbor using one of the following methods (for IPv6): <ul style="list-style-type: none"> <li>• <code>standard</code>: advertise standard capabilities</li> <li>• <code>extended</code>: advertise extended capabilities</li> <li>• <code>both</code>: advertise extended and standard capabilities (default)</li> <li>• <code>disable</code>: disable the advertising of the COMMUNITY attribute</li> </ul>	both
keep-alive-timer <0-65535>	How often (in seconds) the router sends out keepalive messages to neighbor routers to maintain those sessions.	No default
holdtime-timer <0, 3-65535>	How long (in seconds) the router will wait for a keepalive message before declaring a router offline. A shorter time will find an off-line router faster.	No default
connect-timer <0-65535>	Interval (in seconds) for connect timer.	No default
unsuppress-map <string>	Specify the name of the IPv4 route map to selectively unsuppress suppressed routes. Only the route maps for this protocol are listed. You must create the route map before it can be selected here. See <a href="#">config router route-map on page 76</a> .	No default

Variable	Description	Default
unsuppress-map6 <string>	Specify the name of the IPv6 route map to selectively unsuppress suppressed routes. Only the route maps for this protocol are listed. You must create the route map before it can be selected here. See <a href="#">config router route-map on page 76</a> .	No default
update-source {interface_name}	Interface to use as source IP/IPv6 address of TCP connections.	No default
weight <0-65535>	Neighbor weight.	No default
<b>config network</b>	Configure the BGP IPv4 network table.	
<identifier>	Enter an identifier.	No default
backdoor {disable   enable}	Enable route as backdoor.	disable
prefix <IPv4_address_netmask>	Set the network IPv4 prefix. Use the class IPv4 address and netmask with correction.	0.0.0.0 0.0.0.0
route-map <string>	Specify the name of the route map. Only the route maps for this protocol are listed. See <a href="#">config router route-map on page 76</a> .	No default
<b>config network6</b>	Configure the BGP IPv6 network table.	
<identifier>	Enter an identifier.	No default
backdoor {disable   enable}	Enable route as backdoor.	disable
prefix <IPv6_address_netmask>	Set the network IPv6 prefix. Use the class IPv6 address and netmask with correction.	No default
route-map <string>	Specify the name of the route map. Only the route maps for this protocol are listed. See <a href="#">config router route-map on page 76</a> .	No default
<b>config redistribute {connected   isis   ospf   rip   static}</b>	Configure the BGP IPv4 redistribute table.	
status {disable   enable}	You can enable BGP to provide connectivity between connected, static, RIP, and/or OSPF IPv4 routes. BGP redistributes the routes from one protocol to another. When a large internetwork is divided into multiple routing domains, use the subcommand to redistribute routes to the various domains.	disable

Variable	Description	Default
route-map <string>	Specify the name of the route map that identifies the routes to redistribute. If a route map is not specified, all routes are redistributed to BGP. Only the route maps for this protocol are listed. You must create the route map before it can be selected here. See <a href="#">config router route-map on page 76</a> .	No default
<b>config redistribute6 {connected   isis   ospf   rip   static}</b>	Configure the BGP IPv6 redistribute table.	
status {disable   enable}	You can enable BGP to provide connectivity between connected, static, RIP, and/or OSPF IPv6 routes. BGP redistributes the routes from one protocol to another. When a large internetwork is divided into multiple routing domains, use the subcommand to redistribute routes to the various domains.	disable
route-map <string>	Specify the name of the route map that identifies the routes to redistribute. If a route map is not specified, all routes are redistributed to BGP. Only the route maps for this protocol are listed. You must create the route map before it can be selected here. See <a href="#">config router route-map on page 76</a> .	No default

## Example

This example shows how to configure internal BGP routing:

```

config router bgp
  set as 6500
  set router-id 1.2.3.4
  config neighbor
    edit "172.168.111.5"
      set remote-as 6500
    next
  end
  config network
    edit 1
      set prefix 192.168.2.0 255.255.255.0
    next
  end
  config redistribute "connected"
end
end
end

```

## config router community-list

Use this command to identify BGP routes according to their COMMUNITY attributes (see RFC 1997). Each entry in the community list defines a rule for matching and selecting routes based on the setting of the COMMUNITY attribute.

### Syntax

```
config router community-list
  edit <community_list_name>
    set type {expanded | standard}
    config rule
      edit <rule_identifier>
        set action {deny | permit}
        set regexp <regular_expression>
        set match <community_number | internet | local-AS | no-advertise | no-export>
      end
    end
  end
```

Variable	Description	Default
<community_list_name>	Enter a name for the community list. <b>NOTE:</b> If the community list name is a number in the range of 1-99, the <code>type</code> is set to <code>standard</code> by default. If the community list name is a number greater than 99, the <code>type</code> is set to <code>expanded</code> by default.	No default
type {expanded   standard}	Specify the type of community to match. <b>NOTE:</b> This field is valid only when the community list name is not numeric.	standard
<b>config rule</b>	Configure the community list rule.	
<rule_identifier>	Enter a rule identifier.	No default
action {deny   permit}	Permit or deny route-based operations, based on the route's COMMUNITY attribute.	No default
regexp <regular_expression>	If you select an expanded community, specify an ordered list of COMMUNITY attributes as a regular expression. The value or values are used to match a community. Enclose a complex regular expression value within double-quotation marks.	No default
match <community_number   internet   local-AS   no-advertise   no-export>	If you select a standard community, specify the criteria for matching a reserved community: <ul style="list-style-type: none"> <li>Use decimal notation to match one or more COMMUNITY attributes having the syntax AA:NN, where AA represents an AS, and NN is the community identifier. Delimit complex expressions with double-quotation marks (for example, "123:234 345:456").</li> <li>To match all routes in the Internet community, type <code>internet</code>.</li> <li>To match all routes in the LOCAL_AS community, type <code>local-AS</code>. Matched routes are not advertised locally.</li> </ul>	No default

Variable	Description	Default
	<ul style="list-style-type: none"> <li>To select all routes in the NO_ADVERTISE community, type <code>no-advertise</code>. Matched routes are not advertised.</li> <li>To select all routes in the NO_EXPORT community, type <code>no-export</code>. Matched routes are not advertised to EBGPeers. If a confederation is configured, the routes are advertised within the confederation.</li> </ul>	

## config router isis

Intermediate System to Intermediate System Protocol (IS-IS) allows routing of ISO's OSI protocol stack Connectionless Network Service (CLNS). IS-IS is an Interior Gateway Protocol (IGP) that is not intended to be used between Autonomous Systems (AS).

### Syntax

```
config router isis
    set auth-keychain-area <string>
    set auth-keychain-domain <string>
    set auth-mode-area {md5 | password}
    set auth-mode-domain {md5 | password}
    set auth-password-area <password>
    set auth-password-domain <password>
    set auth-sendonly-area {enable | disable}
    set auth-sendonly-domain {enable | disable}
    set default-information-level {level-1 | level-1-2 | level-2}
    set default-information-level6 {level-1 | level-1-2 | level-2}
    set default-information-metric <0-4261412864>
    set default-information-metric6 <0-4261412864>
    set default-information-originate {always | disable | enable}
    set default-information-originate6 {always | disable | enable}
    set ignore-attached-bit {disable | enable}
    set is-type {level-1 | level-1-2 | level-2-only}
    set log-neighbour-changes {disable | enable}
    set lsp-gen-interval-l1 <1-120>
    set lsp-gen-interval-l2 <1-120>
    set lsp-refresh-interval <1-65535>
    set max-lsp-lifetime <350-65535>
    set metric-style {narrow | transition | wide}
    set overload-bit {disable | enable}
    set redistribute-l1 {disable | enable}
    set redistribute-l1-list <string>
    set redistribute6-l1 {disable | enable}
    set redistribute6-l1-list <string>
    set router-id <IP_address>
    set spf-interval-exp-l1 <1-120>
    set spf-interval-exp-l2 <1-120>
    config interface
        edit <IS-IS interface name>
            set auth-keychain-hello <string>
            set auth-mode-hello {md5 | password}
            set auth-password-hello <password>
            set bfd {enable | disable}
```

```

    set bfd6 {enable | disable}
    set circuit-type {level-1 | level-1-2 | level-2}
    set csnp-interval-l1 <1-65535 seconds>
    set csnp-interval-l2 <1-65535 seconds>
    set hello-interval-l1 <1-65535 seconds; 0 to use 1-second hold time>
    set hello-interval-l2 <1-65535 seconds; 0 to use 1-second hold time>
    set hello-multiplier-l1 <2-100>
    set hello-multiplier-l2 <2-100>
    set hello-padding {disable | enable}
    set metric-l1 <1-63>
    set metric-l2 <1-63>
    set passive {disable | enable}
    set priority-l1 <0-127>
    set priority-l2 <0-127>
    set status {disable | enable}
    set status6 {disable | enable}
    set wide-metric-l1 <1-16777214>
    set wide-metric-l2 <1-16777214>
end
config net
  edit <identifier>
    set <IS-IS net xx.xxxx. ... .xxxx.xx>
  end
config redistribute {bgp | connected | ospf | rip | static}
  set status {disable | enable}
  set metric <0-4261412864>
  set metric-type {external | internal}
  set level {level-1 | level-1-2 | level-2}
  set routemap <string>
end
config redistribute6 {bgp6 | connected | ospf6 | ripng | static}
  set status {disable | enable}
  set metric <0-4261412864>
  set level {level-1 | level-1-2 | level-2}
  set routemap <string>
end
config summary-address
  edit <summary address entry identifier>
    set level {level-1 | level-1-2 | level-2}
    set prefix <IPv4 address and netmask>
  end
config summary-address6
  edit <summary address entry identifier>
    set level {level-1 | level-1-2 | level-2}
    set prefix6 <IPv6 address and netmask>
  end
end
end

```

Variable	Description	Default
auth-keychain-area <string>	IS-IS area (level-1) authentication keychain. This command is applicable when the area's authentication mode is md5.	No default
auth-keychain-domain <string>	IS-IS domain (level-2) authentication key-chain. This command is applicable when domain's auth mode is md5.	No default

Variable	Description	Default
auth-mode-area {md5   password}	IS-IS area (level-1) authentication mode.	password
auth-mode-domain {md5   password}	IS-IS domain (level-2) authentication mode.	password
auth-password-area <password>	IS-IS area (level-1) authentication password. This command is applicable when area's authentication mode is <code>password</code> .	No default
auth-password-domain <password>	IS-IS domain (level-2) authentication password. This command is applicable when domain's authentication mode is <code>password</code> .	No default
auth-sendonly-area {enable   disable}	IS-IS area (level-1) authentication send-only.	disable
auth-sendonly-domain {enable   disable}	IS-IS domain (level-2) authentication send-only.	disable
default-information-level {level-1   level-1-2   level-2}	Distribute default IPv4 route into level's link-state packet (LSP).	level-2
default-information-level6 {level-1   level-1-2   level-2}	Distribute default IPv6 route into level's LSP.	level-2
default-information-metric <0-4261412864>	Default IPv4 information metric.	10
default-information-metric6 <0-4261412864>	Default IPv6 information metric.	10
default-information-originate {always   disable   enable}	Enable or disable the generation of an IPv4 default route.	disable
default-information-originate6 {always   disable   enable}	Enable or disable the generation of an IPv6 default route.	disable
ignore-attached-bit {disable   enable}	Ignore attached bit on incoming level-1 LSP.	disable
is-type {level-1   level-1-2   level-2-only}	Set the IS-IS level to use: <ul style="list-style-type: none"> <li>level-1: intra-area</li> <li>level-1-2: both intra-area and inter-area</li> <li>level-2-only: inter-area</li> </ul>	level-1-2
log-neighbour-changes {disable   enable}	Enable logging of IS-IS neighbor's changes	enable
lsp-gen-interval-l1 <1-120>	Minimum interval for level-1 LSP regenerating.	1
lsp-gen-interval-l2 <1-120>	Minimum interval for level-2 LSP regenerating.	1
lsp-refresh-interval <1-65535>	LSP refresh time in seconds.	900
max-lsp-lifetime <350-65535>	Maximum LSP lifetime in seconds.	1200

Variable	Description	Default
metric-style {narrow   transition   wide}	Use old-style (ISO 10589) or new-style packet formats. <ul style="list-style-type: none"> <li><b>narrow:</b> Use the old style of TLVs with narrow metric (default)</li> <li><b>transition:</b> Send and accept both styles of TLVs during the transition.</li> <li><b>wide:</b> Use the new style of TLVs to carry a wider metric.</li> </ul>	narrow
overload-bit {disable   enable}	Signal other routers not to use this bit in shortest-path-first (SPF).	disable
redistribute-l1 {disable   enable}	Redistribute level-1 IPv4 routes into level 2.	enable
redistribute-l1-list <string>	Access-list for redistributing level-1 IPv4 routes to level 2.	No default
redistribute-l1-list <string>	Access-list for redistributing level-1 IPv6 routes to level 2.	No default
redistribute-l1-list <string>	Access-list for redistributing level-1 IPv6 routes to level 2.	No default
router-id <IP_address>	Router identifier.	0.0.0.0
spf-interval-exp-l1 <1-120>	Level-1 SPF minimum calculation delay in seconds.	1
spf-interval-exp-l2 <1-120>	Level-2 SPF minimum calculation delay in seconds.	1
<b>config interface</b>	Configure the IS-IS interface.	
<IS-IS interface name>	Select the IS-IS interface name to configure.	No default
auth-keychain-hello <string>	Hello protocol data unit (PDU) authentication keychain. This command is applicable when the hello packet's authentication mode is <code>md5</code> .	No default
auth-mode-hello {md5   password}	Hello PDU authentication mode.	password
auth-password-hello <password>	Hello PDU authentication password. This command is applicable when hello's authentication mode is <code>password</code> .	No default
bfd {enable   disable}	Enable or disable bidirectional forwarding detection (BFD) for IPv4 traffic.	disable
bfd6 {enable   disable}	Enable or disable BFD for IPv6 traffic.	disable
circuit-type {level-1   level-1-2   level-2}	Set the IS-IS circuit type to use for this interface: <ul style="list-style-type: none"> <li><b>level-1:</b> intra-area</li> <li><b>level-1-2:</b> both intra-area and inter-area</li> <li><b>level-2-only:</b> inter-area</li> </ul>	level-1-2
csnp-interval-l1 <1-65535>	Level-1 complete sequence number PDU (CSNP) interval, in number of seconds.	10
csnp-interval-l2 <1-6553>	Level-2 CSNP interval, in number of seconds.	10
hello-interval-l1 <1-65535>	Level-1 hello packet interval, in number of seconds. Use 0 for a 1-second hold time.	10



Variable	Description	Default
hello-interval-l2 <1-65535>	Level-2 hello packet interval, in number of seconds. Use 0 for a 1-second hold time.	10
hello-multiplier-l1 <2-100>	Level-1 multiplier for hello packet holding time.	3
hello-multiplier-l2 <2-100>	Level-2 multiplier for hello packet holding time.	3
hello-padding {disable   enable}	Enable padding to IS-IS hello packets.	enable
metric-l1 <1-63>	Level-1 metric for interface.	10
metric-l2 <1-63>	Level-2 metric for interface.	10
passive {disable   enable}	Set this interface as passive.	disable
priority-l1 <0-127>	Level-1 priority.	64
priority-l2 <0-127>	Level-2 priority.	64
status {disable   enable}	Enable or disable the interface for IS-IS for IPv4 traffic.	enable
status6 {disable   enable}	Enable or disable the interface for IS-IS for IPv6 traffic.	enable
wide-metric-l1 <1-16777214>	Level-1 wide metric for interface.	10
wide-metric-l2 <1-16777214>	Level-2 wide metric for interface.	10
<b>config net</b>	Configure the IS-IS network.	
<identifier>	An integer identifier; 0 is the lowest available identifier.	No default
<IS-IS net xx.xxxx. ... .xxxx.xx>	Set the IS-IS network.	No default
<b>config redistribute {bgp   connected   ospf   rip   static}</b>	Configure the IS-IS redistribute IPv4 protocols.	
status {disable   enable}	Enable or disable the redistribution of routes from other routing protocols using IS-IS.	disable
metric <0-4261412864>	Redistribution metric.	10
metric-type {external   internal}	Select <code>external</code> or <code>internal</code> for the metric type.	external
level {level-1   level-1-2   level-2}	Set the IS-IS level to use for redistributing routes: <ul style="list-style-type: none"> <li>level-1: intra-area</li> <li>level-1-2: both intra-area and inter-area</li> <li>level-2-only: inter-area</li> </ul>	level1-2
route-map <string>	Enter the route map name. Only the route maps for this protocol are listed. You must create the route map before selecting it. See <a href="#">config router route-map on page 76</a> .	No default
<b>config redistribute6 {bgp6   connected   ospf6   ripng   static}</b>	Configure the IS-IS redistribute IPv6 protocols.	

Variable	Description	Default
status {disable   enable}	Enable or disable the redistribution of routes from other routing protocols using IS-IS.	disable
metric <0-4261412864>	Redistribution metric.	10
level {level-1   level-1-2   level-2}	Set the IS-IS level to use for redistributing routes: <ul style="list-style-type: none"> <li>level-1: intra-area</li> <li>level-1-2: both intra-area and inter-area</li> <li>level-2-only: inter-area</li> </ul>	level1-2
routermap <string>	Enter the route map name. Only the route maps for this protocol are listed. You must create the route map before selecting it. See <a href="#">config router route-map on page 76</a> .	No default
<b>config summary-address</b> Configure the summarizing IPv4 address ranges in the IS-IS routing table.		
<summary address entry identifier>	Enter the summary address entry ID. The value range is 0-4294967295.	No default
level {level-1   level-1-2   level-2}	Set the IS-IS level to use for the summary database: <ul style="list-style-type: none"> <li>level-1: intra-area</li> <li>level-1-2: both intra-area and inter-area</li> <li>level-2-only: inter-area</li> </ul>	level-2
prefix <IPv4 address and netmask>	Set the IPv4 address and netmask for the prefix.	No default
<b>config summary-address6</b> Configure the summarizing IPv6 address ranges in the IS-IS routing table.		
<summary address entry identifier>	Enter the summary address entry ID. The value range is 0-4294967295.	No default
level {level-1   level-1-2   level-2}	Set the IS-IS level to use for the summary database: <ul style="list-style-type: none"> <li>level-1: intra-area</li> <li>level-1-2: both intra-area and inter-area</li> <li>level-2-only: inter-area</li> </ul>	level-2
prefix6 <IPv6 address and netmask>	Set the IPv6 address and netmask for the prefix.	No default

## Example

The following is an example of an IS-IS configuration for IPv4 traffic:

```
config router isis
  set default-information-metric 60
  config interface
    edit "vlan100"
      set circuit-type level-1
      set priority-l1 80
      set wide-metric-l1 200
    next
    edit "vlan102"
      set circuit-type level-2
    next
```

```

end
config net
  edit 1
    set net 49.0002.0000.0000.1048.00
  next
end
set metric-style wide
config redistribute "connected"
  set status enable
end
config redistribute "rip"
end
config redistribute "ospf"
end
config redistribute "bgp"
end
config redistribute "static"
end
end

```

## config router key-chain

Use this command to configure a keychain. A keychain is a list of one or more authentication keys including its lifetime, which is how long each key is valid. Use keys with overlapping lifetimes to prevent the failure of routing updates.

### Syntax

```

config router key-chain
  edit <keychain_name>
    config key
      edit <keychain_int>
        set key-string <key_str>
        set accept-lifetime <START> <END>
        set send-lifetime <START> <END>
      end
    end
  end
end

```

Variable	Description	Default
<keychain_name>	Enter a name for your keychain.	No default
<b>config key</b>	Configure the key.	
<keychain_int>	Enter the keychain identifier.	No default
key-string <key_str>	Enter a password string for the key.	No default
accept-lifetime <START> <END>	Enter the lifetime of a received authentication key. START and END use the format of HH:MM:SS DAY MONTH YEAR where: <ul style="list-style-type: none"> <li>HH:MM:SS is the time of day then the lifetime starts in hours, minutes, and seconds.</li> <li>DAY is the day of the month to start. The range is 1-31.</li> <li>MONTH is the month of the year to start. The range is 1-</li> </ul>	No default

Variable	Description	Default
	12. <ul style="list-style-type: none"> <li>YEAR is the year to start. The range is 1993-2035.</li> </ul> END can also be set to <code>infinite</code> or <code>&lt;duration&gt;</code> , which is the number of seconds that the key is valid. the range of <code>&lt;duration&gt;</code> is 1-2147483646.	
<code>send-lifetime &lt;START&gt; &lt;END&gt;</code>	Enter the lifetime of a sent authentication key. START and END use the format of HH:MM:SS DAY MONTH YEAR where: <ul style="list-style-type: none"> <li>HH:MM:SS is the time of day then the lifetime starts in hours, minutes, and seconds.</li> <li>DAY is the day of the month to start. The range is 1-31.</li> <li>MONTH is the month of the year to start. The range is 1-12.</li> <li>YEAR is the year to start. The range is 1993-2035.</li> </ul> END can also be set to <code>infinite</code> or <code>&lt;duration&gt;</code> , which is the number of seconds that the key is valid. the range of <code>&lt;duration&gt;</code> is 1-2147483646.	No default

## Example

This example shows how to add a key to a new keychain:

```
config router key-chain
  edit keychain1
    config key
      edit 1
        set key-string 1234567890
        set accept-lifetime 01:02:03 1 8 2017 infinite
        set send-lifetime 01:02:03 1 8 2017 infinite
      end
    end
  end
```

## config router multicast

A FortiSwitch unit can operate as a Protocol Independent Multicast (PIM) version-4 router. FortiSwitchOS supports PIM source-specific multicast (SSM) and version 3 of Internet Group Management Protocol (IGMP).

You can configure a FortiSwitch unit to support PIM using the `config router multicast` CLI command. When PIM is enabled, the FortiSwitch unit allocates memory to manage mapping information. The FortiSwitch unit communicates with neighboring PIM routers to acquire mapping information and, if required, processes the multicast traffic associated with specific multicast groups.

## Syntax

```
config router multicast
  set multicast-routing {disable | enable}
  config interface
    edit {interface_name | internal | mgmt}
      set pim-mode ssm-mode
      set hello-interval <1-180 seconds>
      set dr-priority <1-4294967295>
```

```

        set multicast-flow <string>
    config igmp
        set query-interval <1-1800 seconds>
        set query-max-response-time <1-25 seconds>
    end
end

```

Variable	Description	Default
multicast-routing {disable   enable}	Enable or disable multicast routing.	disable
{interface_name   internal   mgmt}	Set which interface to configure for multicast routing.	No default
pim-mode ssm-mode	Set the PIM operation mode to SSM mode.	ssm-mode
hello-interval <1-180 seconds>	Specify the amount of time that the FortiSwitch unit waits between sending hello messages to neighboring PIM routers.	30
dr-priority <1-4294967295>	Assign a priority to the FortiSwitch unit Designated Router (DR) candidacy. The value is compared to that of other DR interfaces connected to the same network segment, and the router having the highest DR priority is selected to be the DR. If two DR priority values are the same, the interface having the highest IP address is selected.	1
multicast-flow <string>	Connect the named multicast flow to this interface. You must create the multicast flow before it can be selected here. See <a href="#">config router multicast-flow on page 53</a> .	No default
<b>config igmp</b>	Configure the multicast-flow entries.	
query-interval <1-1800 seconds>	Set the interval between queries to IGMP hosts.	125
query-max-response-time <1-25 seconds>	Set the maximum time to wait for an IGMP query response.	10

## config router multicast-flow

Use this command to configure the source allowed for a multicast flow when using PIM-SM or PIM-SSM.

### Syntax

```

config router multicast-flow
    edit <name>
        set comments <string>
        config flows
            edit <multicast-flow_entry_identifier>
                set group-addr <224-239.xxx.xxx.xxx>
                set group-addr-end <224-239.xxx.xxx.xxx>
                set source-addr <IP_address>
            end
        end
    end
end

```

Variable	Description	Default
<name>	Name of the multicast flow.	No default
<string>	Enter an optional description of the multicast flow.	No default
<multicast-flow_entry_identifier>	Enter the multicast-flow entry identifier.	No default
group-addr <224-239.xxx.xxx.xxx>	Enter the starting multicast group address (IPv4).	0.0.0.0
group-addr-end <224-239.xxx.xxx.xxx>	Optional. Enter the ending multicast group address (IPv4). The range must not overlap other defined ranges.	0.0.0.0
source-addr <IP_address>	Enter an IP address for the multicast source (IPv4).	0.0.0.0

## config router ospf

Use this command to configure OSPF routing for IPv4.

**NOTE:** You must have an advanced features license to use OSPF routing.

### Syntax

```
config router ospf
  set router-id <router_ipv4>
  set abr-type {cisco | ibm | shortcut | standard}
  set database-overflow {enable | disable}
  set database-overflow-max-external-lsa <integer>
  set database-overflow-time-to-recover <integer>
  set distance-external <external_int>
  set distance-inter-area <inter_int>
  set distance-intra-area <intra_int>
  set default-information-originate {always | disable | enable}
  set default-information-metric <metric_int>
  set default-information-metric-type {1 | 2}
  set distance <distance_int>
  set rfc1583-compatible {disable | enable}
  set spf-timers <delay_int> <hold_int>
  set log-neighbour-changes {disable | enable}
  set passive-interface <name_str>
  config area
    edit <area_ipv4>
      set shortcut {default | disable | enable}
      set type {nssa | regular | stub}
      set default-cost <cost_int>
      set stub-type {no-summary | summary}
      set nssa-translator-role {always | candidate | never}
      config filter-list
        edit <filter_int>
          set direction {in | out}
          set list <list_str>
        end
      end
    end
  config range
```

```
        edit <range_int>
            set advertise {enable | disable}
            set prefix <xxx.xxx.xxx.xxx> <xxx.xxx.xxx.xxx>
            set substitute <xxx.xxx.xxx.xxx> <xxx.xxx.xxx.xxx>
            set substitute-status {enable | disable}
        end
    end
    config virtual-link
        edit <virtual_int>
            set authentication {md5 | none | text}
            set dead-interval <dead_int>
            set hello-interval <hello_int>
            set peer <peer_ipv4>
            set retransmit-interval <retransmit_int>
            set transmit-delay <transmit_int>
        next
    end
next
end
config interface
    edit <interface_str>
        set authentication {md5 | none | text}
        set cost <cost_int>
        set dead-interval <dead_int>
        set hello-interval <hello_int>
        set mtu <mtu_int>
        set mtu-ignore {disable | enable}
        set priority <prioroty_int>
        set retransmit-interval <retransmit_int>
        set transmit-delay <transmit_int>
        set ucast-ttl <1-255>
        config md5-keys
            edit <key_ID>
                set key <MD5_key>
            next
        end
    next
end
config network
    edit <network_int>
        set area <area_ipv4>
        set prefix <xxx.xxx.xxx.xxx xxx.xxx.xxx.xxx>
    end
end
config summary-address
    edit <summary_int>
        set prefix <xxx.xxx.xxx.xxx> <xxx.xxx.xxx.xxx>
        set tag <tag_int>
    next
end
config distribute-list
    edit <distribute_int>
        set access-list <access_str>
        set protocol {bgp | connected | isis | rip | static}
    next
end
config redistribute {bgp | connected | isis | rip | static}
```

```
set status {disable | enable}
set metric <metric_int>
set routemap <routemap_str>
set metric-type {1 | 2}
set tag <0-2147483647>
end
config vrf
edit <VRF_ID>
set abr-type {cisco | ibm | shortcut | standard}
set database-overflow {enable | disable}
set database-overflow-max-external-lsa <integer>
set database-overflow-time-to-recover <integer>
set default-information-metric <metric_int>
set default-information-metric-type {1 | 2}
set default-information-originate {always | disable | enable}
set distance <distance_int>
set distance-external <external_int>
set distance-inter-area <inter_int>
set distance-intra-area <intra_int>
set log-neighbour-changes {disable | enable}
set passive-interface <name_str>
set rfc1583-compatible {disable | enable}
set router-id <router_ipv4>
set spf-timers <delay_int> <hold_int>
config area
edit <area_ipv4>
set shortcut {default | disable | enable}
set type {nssa | regular | stub}
set default-cost <cost_int>
set stub-type {no-summary | summary}
set nssa-translator-role {always | candidate | never}
config filter-list
edit <filter_int>
set direction {in | out}
set list <list_str>
end
end
config range
edit <range_int>
set advertise {enable | disable}
set prefix <xxx.xxx.xxx.xxx> <xxx.xxx.xxx.xxx>
set substitute <xxx.xxx.xxx.xxx> <xxx.xxx.xxx.xxx>
set substitute-status {enable | disable}
end
end
config virtual-link
edit <virtual_int>
set authentication {none | text}
set dead-interval <dead_int>
set hello-interval <hello_int>
set peer <peer_ipv4>
set retransmit-interval <retransmit_int>
set transmit-delay <transmit_int>
next
end
next
end
```



```

config interface
  edit <interface_str>
    set authentication {none | text}
    set cost <cost_int>
    set dead-interval <dead_int>
    set hello-interval <hello_int>
    set mtu <mtu_int>
    set mtu-ignore {disable | enable}
    set priority <priority_int>
    set retransmit-interval <retransmit_int>
    set transmit-delay <transmit_int>
    config md5-keys
      edit <key_ID>
        set key <MD5_key>
      next
    end
  next
end
config network
  edit <network_int>
    set area <area_ipv4>
    set prefix <xxx.xxx.xxx.xxx xxx.xxx.xxx.xxx>
  end
end
config summary-address
  edit <summary_int>
    set prefix <xxx.xxx.xxx.xxx> <xxx.xxx.xxx.xxx>
    set tag <tag_int>
  next
end
config distribute-list
  edit <distribute_int>
    set access-list <access_str>
    set protocol {bgp | connected | isis | rip | static}
  next
end
config redistribute {connected | rip | static}
  set status {disable | enable}
  set metric <metric_int>
  set routemap <routemap_str>
  set metric-type {1 | 2}
  set tag <0-2147483647>
next
end
next
end

```

Variable	Description	Default
router-id <router_ipv4>	Required. Enter the IPv4 address of the OSPF router.	No default

Variable	Description	Default
abr-type {cisco   ibm   shortcut   standard}	Enter the area border router (ABR) type. Set <code>abr-type</code> to <code>cisco</code> or <code>ibm</code> to allow routes through nonbackbone area when links to the backbone are down. For more information about this option, see RFC 3509, Alternative Implementations of OSPF Area Border Routers.	cisco
database-overflow {enable   disable}	Enable or disable protection against link-state database overflow.	disable
database-overflow-max-external-lsa <integer>	Set the maximum number of external link-state advertisements (LSAs) that are allowed in the link-state database. The value range is 0-2147483647. This option is available only if <code>database-overflow</code> is enabled.	10000
database-overflow-time-to-recover <integer>	Set the number of seconds before the router originates any external LSAs. The value range is 0-65535 seconds. This option is available only if <code>database-overflow</code> is enabled.	300
distance-external <external_int>	Set the OSPF route administrative external distance. The value range is from 0 to 255.	No default
distance-inter-area <inter_int>	Set the OSPF route administrative inter-area distance. The value range is from 0 to 255.	No default
distance-intra-area <intra_int>	Set the OSPF route administrative intra-area distance. The value range is from 0 to 255.	No default
default-information-originate {always   disable   enable}	Enable or disable the generation of the default route into all external routing capable areas using the metric specified by the <code>default-information-metric</code> value and the metric type specified by the <code>default-information-metric-type</code> value. Set the value to <code>always</code> for the default to always be advertised, even when the routing table contains no default.	disable
default-information-metric <metric_int>	Set the metric value for the default route. The value range is from 1 to 16777214.	10
default-information-metric-type {1   2}	Set the metric type for the default route.	2
distance <distance_int>	Set the OSPF route administrative distance. The value range is from 1 to 255.	110
rfc1583-compatible {disable   enable}	Enable or disable RFC1583 compatibility.	disable
spf-timers <delay_int> <hold_int>	Set the number of seconds before the shortest path first (SPF) is calculated and the number of seconds between consecutive SPF calculations. The range for each value is from 0 to 600.	5 10
log-neighbour-changes {disable   enable}	Enable or disable the logging of changes to the OSPF neighbor.	enable

Variable	Description	Default
passive-interface <name_str>	Select which interface to set to passive mode. <b>NOTE:</b> You need to add the interface prefix under the <code>config network</code> command (under <code>config router ospf</code> ).	No default
<b>config area</b>	Configure the OSPF area.	
<area_ipv4>	Enter the IP address for the area.	No default
shortcut {default   disable   enable}	Enable or disable whether shortcuts are allowed in the area.	default
type {nssa   regular   stub}	Set the area type. <b>NOTE:</b> This field is not applicable for the backbone area (0.0.0.0), which is set to <code>regular</code> type by default.	regular
default-cost <cost_int>	If the area type is stub or not-so-stubby area (NSSA), set the cost of default-summary LSAs announced to stubby areas. The value range is 0-2147483647.	1
stub-type {no-summary   summary}	If the area type is stub or NSSA, set whether inter-area summaries can be used.	summary
nssa-translator-role {always   candidate   never}	If the area type is NSSA, set the type of NSSA translator role.	candidate
<b>config filter-list</b>	Configure the OSPF area filter list.	
<filter_int>	Enter the filter list identifier.	No default
direction {in   out}	Set the direction to or from the area for the prefix list and access list.	out
list <list_str>	Enter the access-list name or prefix-list name for the area.	No default
<b>config range</b>	Configure the OSPF area range.	
<range_int>	Enter the range list identifier.	No default
advertise {enable   disable}	Enable or disable the advertise status. If this option is set to <code>disable</code> , the intra area paths from this range are not advertised in other areas.	enable
prefix <xxx.xxx.xxx.xxx> <xxx.xxx.xxx.xxx>	Enter the summary prefix.	0.0.0.0 0.0.0.0
substitute <xxx.xxx.xxx.xxx> <xxx.xxx.xxx.xxx>	Enter the substitute prefix.	0.0.0.0 0.0.0.0
substitute-status {enable   disable}	Enable or disable whether the substitute prefix is used instead of the prefix.	disable
<b>config virtual-link</b>	Configure the OSPF virtual link.	
<virtual_int>	Enter the virtual-link identifier.	No default

Variable	Description	Default
authentication {md5   none   text}	Set the authentication type.	none
dead-interval <dead_int>	Enter the dead interval.	40
hello-interval <hello_int>	Enter the hello interval.	10
peer <peer_ipv4>	Enter the IP address of the virtual link neighbor.	0.0.0.0
retransmit-interval <retransmit_int>	Set the time between retransmitting lost link-state advertisement packets.	5
transmit-delay <transmit_int>	Enter the link-state packet transmit delay.	1
<b>config md5-keys</b>	These commands are applicable only when the virtual-link authentication field is set to md5.	
<key_ID>	Enter the MD5 key identifier.	No default
<MD5_key>	Enter a string up to 16 characters.	No default
<b>config interface</b>	Configure the OSPF interface.	
<interface_str>	Enter the OSPF interface name.	No default
authentication {md5   none   text}	Set the authentication type for OSPF packets.	none
bfd {disable   enable}	Enable or disable BFD on this interface.	disable
cost <cost_int>	Enter the link cost on this interface. The value range is 0-65535. Set this option to 0 for auto-cost.	10
dead-interval <dead_int>	Enter the dead interval.	40
hello-interval <hello_int>	Enter the hello interval.	10
mtu <mtu_int>	Enter the maximum transmission unit (MTU) size in bytes for the database description packets. The value range is 576-65535.	Not set
mtu-ignore {disable   enable}	Set whether to use the MTU size.	disable
priority <priority_int>	Set the router priority for this interface. the router with the highest priority is more eligible to become the designated router. Setting the option to 0 makes the router ineligible to become the designated router. The value range is 0-255.	1
retransmit-interval <retransmit_int>	Set the time between retransmitting lost link-state advertisement packets.	5
transmit-delay <transmit_int>	Enter the link-state transmit delay.	1
ucast-ttl <1-255>	Specify how many seconds unicast messages are kept.	0
<b>config md5-keys</b>	Use these commands to add MD5 keys for the OSPF interface. These commands are applicable only when the interface authentication field is set to md5.	

Variable	Description	Default
<key_ID>	Enter the MD5 key identifier.	No default
<MD5_key>	Enter a string up to 16 characters.	No default
<b>config network</b>	Use these commands to enable or disable OSPF on an IP network.	
<network_int>	Enter the network identifier.	No default
<area_ipv4>	Enter the IPv4 address for the area.	No default
prefix <xxx.xxx.xxx.xxx> <xxx.xxx.xxx.xxx>	Enter the IPv4 address and netmask.	No default
<b>config summary-address</b>	Configure the aggregate address for redistributed routes.	
<summary_int>	Enter the identifier for the summary address.	No default
prefix <xxx.xxx.xxx.xxx> <xxx.xxx.xxx.xxx>	Enter the IPv4 address and netmask.	No default
set tag <tag_int>	Enter the tag value. The range is 0-2147483647.	0
<b>config distribute-list</b>	Configure the redistribute routes filter.	
<distribute_int>	Enter the distribute list identifier.	No default
access-list <access_str>	Enter the access list name.	No default
protocol {bgp   connected   isis   rip   static}	Set the protocol type.	connected
<b>config redistribute {bgp   connected   isis   rip   static}</b>	Use these commands for the redistribute configuration.	
redistribute {bgp   connected   isis   rip   static}	Set the type of network to redistribute.	No default
status {disable   enable}	Enable or disable the redistribution.	disable
metric <metric_int>	Enter the metric for redistributed routes.	10
routemap <routemap_str>	Enter the route map name to filter the redistributed routes. Only the route maps for this protocol are listed.	No default
metric-type {1   2}	Set the metric type of redistributed routes.	2
tag <0-2147483647>	Set the tag value.	No default
<b>config vrf</b>	Use these commands to create multiple routing tables within the same router.	
<VRF_ID>	Use the same VRF identifier that was configured under the <code>config router vrf</code> command. The commands under <code>config vrf</code> are the same as the commands under <code>config router ospf</code> .	No default

## Example

This example shows how to set the router identifier, create an area, configure the OSPF interface, create the network (set the network prefix and associate with an area), configure the IPv4 address summary, and redistribute the routes:

```
config router ospf

    set router-id 20.1.1.1

    config area
        edit 0.0.0.0
            next
        edit 0.0.0.1
            next
        end

    config interface
        edit "ospf_1"
            set interface "vlan10"
        next
        edit "ospf_2"
            set interface "vlan20"
        next
        end

    config network
        edit 1
            set area 0.0.0.1
            set prefix 20.1.1.0 255.255.255.0
        next
        edit 2
            set area 0.0.0.0
            set prefix 10.1.1.0 255.255.255.0
        next
        end

    config summary-address
        edit 1
            set prefix 40.1.0.0 255.255.0.0
        next
        end

    config redistribute "connected"
        set status enable
    end

end
```

## config router ospf6

Use this command to configure open shortest path first (OSPF) routing for IPv6.

**NOTE:** You must have an advanced features license to use OSPF routing.

## Syntax

```

config router ospf6
  set router-id <router_ipv4>
  set spf-timers <delay_int> <hold_int> <max_int>
  set log-neighbor-changes {disable | enable}
  config area
    edit <area_ipv4>
      set type {regular | stub}
      set stub-type {summary | no-summary}
      config filter-list
        edit <filter_int>
          set direction {in | out}
          set list <list_str>
        next
      end
    config range
      edit <range_int>
        set advertise {enable | disable}
        set prefix <xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx/xxx>
      next
    end
  next
end
config interface
  edit <interface_str>
    set area-id <Required_IPv4_address>
    set bfd {disable | enable}
    set cost <cost_int>
    set dead-interval <dead_int>
    set hello-interval <hello_int>
    set passive {disable | enable}
    set priority <prioriority_int>
    set retransmit-interval <retransmit_int>
    set status {enable | disable}
    set transmit-delay <transmit_int>
  next
end
config redistribute {connected | static}
  set status {disable | enable}
  set routemap <routemap_str>
end
end

```

Variable	Description	Default
router-id <router_ipv4>	Required. Enter the IPv4 address of the OSPF router.	No default

Variable	Description	Default
spf-timers <delay_int> <hold_int> <max_int>	Set the number of milliseconds to delay before the shortest path first (SPF) is calculated, the initial number of milliseconds between consecutive SPF calculations, and the maximum number of milliseconds between consecutive SPF calculations. The range for each value is from 0 to 600.	5 10 10
log-neighbor-changes {disable   enable}	Enable or disable the logging of changes to the OSPF neighbor	enable
<b>config area</b>	Configure the OSPF6 area.	
<area_ipv4>	Enter the IPv4 address for the area.	No default
type {regular   stub}	Set the area type to regular or stub.	regular
stub-type {summary   no-summary}	If the <code>type</code> is set to <code>stub</code> , set the stub type to summary or no summary.	summary
<b>config filter-list</b>	Configure the OSPF6 area filter list.	
<filter_int>	Enter the filter list identifier.	No default
direction {in   out}	Set the direction to or from the area for the prefix list and access list.	out
list <list_str>	Enter the IPv6 access-list name or IPv6 prefix-list name for the area.	No default
<b>config range</b>	Configure the OSPF6 area range.	
<range_int>	Enter the range list identifier.	No default
advertise {enable   disable}	Enable or disable the advertise status. If this option is set to <code>disable</code> , the intra-area paths from this range are not advertised in other areas.	enable
prefix <xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx/xxx>	Required. Enter the IPv6 prefix.	No default
<b>config interface</b>	Configure the OSPF6 interface.	
<interface_str>	Enter the OSPF interface name.	No default
area-id <IPv4_address>	Required. Enter the IPv4 address of the area.	none
bfd {disable   enable}	Enable or disable bidirectional forwarding detection (BFD).	disable
cost <cost_int>	Enter the link cost on this interface. The value range is 0-65535.	10
dead-interval <dead_int>	Enter the dead interval.	40



Variable	Description	Default
hello-interval <hello_int>	Enter the hello interval.	10
passive {disable   enable}	Enable or disable the passive interface.	disable
priority <priority_int>	Set the router priority for this interface. the router with the highest priority is more eligible to become the designated router. Setting the option to 0 makes the router ineligible to become the designated router. The value range is 0-255.	1
retransmit-interval <retransmit_int>	Enter the time between retransmitting lost link-state advertisement packets.	5
status {enable   disable}	Enable or disable the IPv6 OSPF routing on this interface.	enable
transmit-delay <transmit_int>	Enter the link-state transmit delay.	1
<b>config redistribute {connected   static}</b>	Use these commands for the redistribute configuration.	
status {disable   enable}	Enable or disable the redistribution.	disable
route-map <route-map_str>	Enter the route map name to filter the redistributed routes. Only the route maps for this protocol are listed.	No default

## Example

This example shows how to set the router identifier, create an area, configure the OSPF interface, and redistribute the routes:

```
config router ospf6
  set router-id 10.11.101.1
  config area
    edit 0.0.0.1
      config filter-list
        edit 1
          set direction in
          set list access1
        next
      end
      config range
        edit 1
          set advertise disable
          set prefix 3f2e:6a8b:78a3:0d82:1725:6a2f:0370:6234/96
        next
      end
    end
  end
config interface
  edit vlan35
    set area 0.0.0.1
    set cost 100
    set priority 100
    set status enable
```

```

        next
    end
    config redistribute connected
        set status enable
    end
end

```

## config router policy

Use this command to create a policy to control routing.

### Syntax

```

config router policy
    config nexthop-group
        edit <name_of_next-hop_group>
            config nexthop
                edit <configuration_identifier>
                    set nexthop-ip <IPv4_address>
                    set nexthop-vrf-name <string>
                next
            end
        next
    end
    config pbr-map
        edit <PBR_map_name>
            set comments <string>
            config rule
                edit <rule_sequence_number>
                    set src <IPv4_address_mask>
                    set dst <IPv4_address_mask>
                    set nexthop-ip <IPv4_address>
                    set nexthop-vrf-name <string>
                    set nexthop-group name <string>
                next
            end
        next
    end
end
config interface
    edit <interface_name>
        set pbr-map-name <PBR_policy_map_name>
    next
end
end

```

Variable	Description	
<b>config nexthop-group</b>	Configure the next-hop group using equal-cost multi-path (ECMP) routing.	
<name_of_next-hop_group>	Enter the name of the next-hop group.	No default
<b>config nexthop</b>	Configure the next hop.	
<configuration_identifier>	Enter the configuration identifier.	No default

Variable	Description	
nexthop-ip <IPv4_address>	Enter the IPv4 address of the next hop.	0.0.0.0
nexthop-vrf-name <string>	Enter the virtual routing and forwarding (VRF) instance name.	No default
<b>config pbr-map</b>	Configure the policy-based routing (PBR) map .	
<PBR_map_name>	Enter the name of the PBR map.	No default
comments <string>	Enter a descriptive comment.	No default
<b>config rule</b>	Configure the PBR rule.	
<rule_sequence_number>	Enter a rule identifier. The range of values is 1-10000.	No default
src <IPv4_address_mask>	Enter the source IPv4 address and mask.	0.0.0.0 0.0.0.0
dst <IPv4_address_mask>	Enter the destination IPv4 address and mask.	0.0.0.0 0.0.0.0
nexthop-ip <IPv4_address>	Enter the IPv4 address of the next hop.	0.0.0.0
nexthop-vrf-name <string>	Enter the name of the VRF instance that the next-hop address belongs to. If the name is not specified, the default VRF is used.	No default
nexthop-group name <string>	Enter the next-hop group name. This setting is used for ECMP.	No default
<b>config interface</b>	Configure the interface.	
<interface_name>	Enter the name of the interface to configure.	No default
pbr-map-name <PBR_map_name>	Enter the name of the PBR map. The PBR map is created with the <code>config pbr-map</code> command.	No default

## Example

This example creates the “pbrmap1” policy for vlan10, which is an ingress switch virtual interface (SVI). The policy has three rules:

- Rule 1 finds packets with a source address of 22.1.1.0/24 and forwards them to the next hop, 12.1.1.2, which belongs to the default VRF instance.
- Rule 2 finds packets with a destination address of 33.1.1.0/24 and forwards them to the ECMP route with the two next-hop IP addresses in the next-hop group . Both next hops belong to the default VRF instance.
- Rule 3 finds packets with a destination address of 11.1.1.0/24 and forwards them to the next hop, 13.1.1.2, which belongs to the “vrfv4” VRF instance.

```
config router policy
  config nexthop-group
    edit "nhgroup1"
      config nexthop
        edit 1
          set nexthop-ip 12.1.1.4
        next
        edit 2
          set nexthop-ip 12.1.1.5
        next
      end
    next
  end
```

```

config pbr-map
  edit "pbrmap1"
    config rule
      edit 1
        set src 22.1.1.0 255.255.255.0
        set nexthop-ip 12.1.1.2
      next
      edit 2
        set dst 33.1.1.0 255.255.255.0
        set nexthop-group-name "nhgroup1"
      next
      edit 3
        set src 11.1.1.0 255.255.255.0
        set nexthop-ip 13.1.1.2
        set nexthop-vrf-name "vrfv4"
      next
    end
  next
end
config interface
  edit "vlan10"
    set pbr-map-name "pbrmap1"
  next
end
end

```

## config router prefix-list

Use this command to configure IPv4 prefix-based filtering.

### Syntax

```

config router prefix-list
  edit <list_int>
    set comments <comment_str>
    config rule
      edit <rule_int>
        set action {deny | permit}
        set prefix {<xxx.xxx.xxx.xxx> <xxx.xxx.xxx.xxx> | any}
        set ge <ge_int>
        set le <le_int>
      end
    end
  end
end

```

Variable	Description	Default
<list_int>	Enter the prefix list identifier.	No default
comments <comment_str>	Enter a descriptive comment.	No default
<b>config rule</b>	Configure the prefix-list rule.	
<rule_int>	Enter the rule identifier.	No default

Variable	Description	Default
action {deny   permit}	Set the action to <code>deny</code> or <code>permit</code> .	permit
prefix {<xxx.xxx.xxx.xxx> <xxx.xxx.xxx.xxx>   any}	Set the prefix to define regular filter criteria, such as any or subnets.	0.0.0.0 0.0.0.0
ge <ge_int>	Enter the minimum IPv4 prefix length to be matched. The value range is between 0 and 32. The prefix list is used if the prefix length is greater than or equal to this value.	No default
le <le_int>	Enter the maximum IPv4 prefix length to be matched. The value range is between 0 and 32. The prefix list is used if the prefix length is less than or equal to this value.	No default

## config router prefix-list6

Use this command to configure IPv6 prefix-based filtering.

### Syntax

```
config router prefix-list6
  edit <name_of_IPv6_prefix_list>
    set comments <string>
    config rule
      edit <rule_ID>
        set action {deny | permit}
        set prefix6 {<IPv6_prefix> | any}
        set ge <0-128>
        set le <0-128>
      next
    end
  end
```

Variable	Description	Default
<name_of_IPv6_prefix_list>	Enter the name of the IPv6 prefix list.	No default
comments <string>	Enter a descriptive comment.	No default
<b>config rule</b>	Configure the IPv6 prefix list rule.	
<rule_ID>	Enter the rule identifier.	No default
action {deny   permit}	Set the action to <code>deny</code> or <code>permit</code> .	permit
prefix6 {<IPv6_prefix>   any}	Enter the IPv6 prefix to match or <code>any</code> .	No default
ge <0-128>	Enter the minimum IPv6 prefix length to be matched. The IPv6 prefix list is used if the prefix length is greater than or equal to this value.	No default
le <0-128>	Enter the maximum IPv6 prefix length to be matched. The IPv6 prefix list is used if the prefix length is less than or equal to this value.	No default

## Example

This example shows how to specify which IPv6 prefixes are allowed in RA messages:

```
config router prefix-list6
  edit "r4"
    config rule
      edit 1
        set action deny
        set prefix6 "2001:4:4:4::4/64"
        set ge 65
        set le 128
      next
      edit 2
        set action permit
        set prefix6 "any"
      next
    end
  next
end
```

## config router rip

Use these commands to configure RIP routing with IPv4 addresses.

**NOTE:** You must have an advanced features license to use RIP routing.

## Syntax

```
config router rip
  set bfd {disable | enable}
  set default-information-originate {disable | enable}
  set default-metric <defaultmetric_int>
  set garbage-timer <garbage_int>
  set passive-interface <name_str>
  set timeout-timer <timeout_int>
  set update-timer <update_int>
  set version {1 | 2}
  config distance
    edit <distanceid_int>
      set access-list <access_string>
      set distance <distance_int>
      set prefix <xxx.xxx.xxx.xxx> <xxx.xxx.xxx.xxx>
    end
  config distribute-list
    edit <distribute_int>
      set direction {in | out}
      set interface <interface_str>
      set listname <listname_str>
      set status {disable | enable}
    end
  config interface
    edit <interface_str>
      set auth-keychain <keychain_str>
      set auth-mode {md5 | none | text}
      set auth-string <password_str>
```

```

        set receive-version {1 | 2 | both | global}
        set send-version {1 | 2 | both | global}
        set split-horizon-status {disable | enable}
        set split-horizon {poisoned | regular}
    end
config neighbor
    edit <neighbor_int>
        set <neighbor_ipv4>
    end
config network
    edit <network_int>
        set prefix <xxx.xxx.xxx.xxx> <xxx.xxx.xxx.xxx>
    end
config offset-list
    edit <offsetlist_int>
        set access-list <accesslist_str>
        set direction {in | out}
        set interface {in | out}
        set offset <offset_int>
        set status {disable | enable}
    end
config redistribute {bgp | connected | isis | ospf | static}
    set status {disable | enable}
    set metric <metric_int>
    set routemap <routemap_str>
end
end

```

Variable	Description	Default
bfd {disable   enable}	Enable or disable BFD.	disable
default-information-originate {disable   enable}	Enable or disable whether a default route is advertised.	disable
default-metric <defaultmetric_int>	Enter the default metric for redistributed routes. This setting does not affect connected routes. The range of values is 1-16. Use the <code>config redistribute connected</code> or <code>config offset-list</code> command to set the metric value for connected routes.	1
garbage-timer <garbage_int>	Enter the number of seconds before a route is removed from the routing table. The range of values is 5-2147483647.	120
passive-interface <name_str>	Specify which interface to set to passive mode. You need to add the interface prefix under <code>config network</code> (under <code>config router rip</code> ).	No default
timeout-timer <timeout_int>	Enter the number of seconds before a route is no longer valid. The route is not removed from the routing table until the neighboring RIP routers are notified that the route has been dropped. The range of values is 5-2147483647.	180

Variable	Description	Default
update-timer <update_int>	Enter the number of seconds between when the complete routing table is sent to neighboring RIP routers. The range of values is 5-2147483647.	30
version {1   2}	Set the RIP version for receiving and sending RIP packets.	2
<b>config distance</b>	Set the admin distance based on the route prefix and RIP neighbor IP.	
<distanceid_int>	Enter the distance identifier.	No default
access-list <access_string>	Enter the access list to match RIP routes.	No default
distance <distance_int>	Enter the RIP admin distance. The value range is from 1 to 255.	120
prefix <xxx.xxx.xxx.xxx> <xxx.xxx.xxx.xxx>	Enter the RIP neighbor IP prefix. Enter 0.0.0.0/0 to match all RIP neighbors.	0.0.0.0 0.0.0.0
<b>config distribute-list</b>	Filter networks from routing updates.	
<distribute_int>	Enter the distribute list identifier.	No default
direction {in   out}	Set the list direction.	out
interface <interface_str>	Enter the RIP interface name for the distribute list.	No default
listname <listname_str>	Enter the access or prefix list name.	No default
status {disable   enable}	Enable or disable whether the distribute list is used.	disable
<b>config interface</b>	RIP interface configuration.	
<interface_str>	Enter the interface name.	No default
auth-keychain <keychain_str>	Enter the name of the keychain to use for this interface.	No default
auth-mode {md5   none   text}	Set the authentication mode used for packets.  RIP version 1 does not use authentication. If <code>auth-mode</code> is set to <code>md5</code> or <code>text</code> for RIP version 1, routing updates are ignored.  <b>NOTE:</b> You must create a keychain first before you can use the MD5 authentication mode with RIP version 2.	none
auth-string <password_str>	If the <code>auth-mode</code> is set to <code>text</code> , enter a password that is less than 16 characters long.	No default
receive-version {1   2   both   global}	Set which version of RIP packets are accepted on this interface. Setting this option to <code>both</code> accepts RIP version 1 and 2. Setting this option to <code>global</code> uses the global RIP version. This setting overrides the global RIP version setting.	global



Variable	Description	Default
send-version {1   2   both   global}	Set which version of RIP packets are sent for this interface. Setting this option to <code>both</code> sends RIP version 1 and 2. Setting this option to <code>global</code> uses the global RIP version. This setting overrides the global RIP version setting.	global
split-horizon-status {disable   enable}	Enable or disable split horizon.	enable
split-horizon {poisoned   regular}	Set the split-horizon type.	regular
<b>config neighbor</b>	Specify a neighbor router. These commands are required only when OSPF runs on nonbroadcast media.	
<neighbor_int>	Enter a RIP neighbor identifier.	No default
<neighbor_ipv4>	Enter an IP address for a RIP neighbor. Use this command if a RIP neighbor does not accept multicast packets.	0.0.0.0
<b>config network</b>	Enable RIP routing on an IP network.	
<network_int>	Enter a network identifier.	No default
prefix <xxx.xxx.xxx.xxx> <xxx.xxx.xxx.xxx>	Enter the prefix.	No default
<b>config offset-list</b>	Configure the offset list to modify the RIP metric.	
<offsetlist_int>	Enter the offset list identifier.	No default
<accesslist_str>	Enter the name of the access list.	No default
direction {in   out}	Set the list direction.	out
interface {in   out}	Set whether to filter incoming or outgoing packets.	No default
offset <offset_int>	Enter the offset for incoming and outgoing metrics to routes learned using RIP. The value range is between 1 and 16.	0
status {disable   enable}	Enable or disable whether the offset list is used.	enable
<b>config redistribute {bgp   connected   isis   ospf   static}</b>	Redistribute configuration.	
redistribute {bgp   connected   isis   ospf   static}	Redistribute routes so that they are included in RIP routing.	No default
status {disable   enable}	Enable or disable whether the routes are redistributed.	disable
metric <metric_int>	Enter the metric of the redistributed routes. The value range is between 0 and 16.	0
route-map <route-map_str>	Enter the route map name to filter the redistributed routes. Only the route maps for this protocol are listed.	No default

## Example

This example shows how to configure the RIP router and add authentication:

```
config router rip
  config network
    edit 1
      set prefix 170.38.65.0/24
    next
    edit 2
      set prefix 128.8.0.0/16
    next
  end
  config interface
    edit "vlan35"
      set auth-mode text
      set auth-string simplepw1
    next
  end
end
```

## config router ripng

Use these commands to configure RIP routing with IPv6 addresses.

**NOTE:** You must have an advanced features license to use RIP routing.

## Syntax

```
config router ripng
  set bfd {disable | enable}
  set default-information-originate {disable | enable}
  set default-metric <defaultmetric_int>
  set garbage-timer <garbage_int>
  set timeout-timer <timeout_int>
  set update-timer <update_int>
  config aggregate-address
    edit <aggregate-address_entry_ID_int>
      set prefix6 <xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx/xxx>
    end
  config distribute-list
    edit <distribute_int>
      set direction {in | out}
      set interface <interface_str>
      set listname <listname_str>
      set status {disable | enable}
    end
  config interface
    edit <interface_str>
      set passive {disable | enable}
      set split-horizon-status {disable | enable}
      set split-horizon {poisoned | regular}
    end
  config offset-list
    edit <offsetlist_int>
      set access-list6 <accesslist_str>
```

```

        set direction {in | out}
        set interface {in | out}
        set offset <offset_int>
        set status {disable | enable}
    end
    config redistribute {bgp | connected | isis | ospf6 | static}
        set status {disable | enable}
        set metric <metric_int>
        set routemap <routemap_str>
    end
end

```

Variable	Description	Default
bfd {disable   enable}	Enable or disable BFD.	disable
default-information-originate {disable   enable}	Enable or disable whether a default route is advertised.	disable
default-metric <defaultmetric_int>	Enter the default metric for redistributed routes. This setting does not affect connected routes. Use the <code>config redistribute connected</code> command to set the metric value for connected routes. The range of values is 1-16.	1
garbage-timer <garbage_int>	Enter the number of seconds before a route is removed from the routing table after it is no longer valid. The range of values is 5-2147483647.	120
timeout-timer <timeout_int>	Enter the number of seconds before a route is no longer valid. The route is not removed from the routing table until the garbage timer expires. The range of values is 5-2147483647.	180
update-timer <update_int>	Enter the number of seconds between when the complete routing table is sent to neighboring RIP routers. The range of values is 5-2147483647.	30
<b>config aggregate-address</b>	Set the aggregate RIPng route announcement.	
<aggregate-address_entry_ID_int>	Enter the identifier for the aggregate-address entry.	No default
prefix6 <xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxx>	Enter the IPv6 prefix.	No default
<b>config distribute-list</b>	Filter networks in routing updates.	
<distribute_int>	Enter the distribute list identifier.	No default
direction {in   out}	Set the list direction.	out
interface <interface_str>	Enter the RIP interface name for the distribute list.	No default

Variable	Description	Default
listname <listname_str>	Enter the IPv6 access or prefix list name.	No default
status {disable   enable}	Enable or disable whether the distribute list is used.	enable
<b>config interface</b>		RIPng interface configuration.
<interface_str>	Enter the interface name.	No default
passive {disable   enable}	Enable or disable whether to suppress routing updates on an interface.	disable
split-horizon-status {disable   enable}	Enable or disable split horizon.	enable
split-horizon {poisoned   regular}	Set the split-horizon type.	regular
<b>config offset-list</b>		Configure the offset list to modify the RIPng metric.
<offsetlist_int>	Enter the offset list identifier.	No default
access-list6 <accesslist_str>	Enter the name of the IPv6 access list.	No default
direction {in   out}	Set the list direction.	out
interface {in   out}	Set the interface to which the offset-list will be applied.	No default
offset <offset_int>	Enter the offset for incoming and outgoing metrics to routes learned using RIP. The value range is between 1 and 16.	0
status {disable   enable}	Enable or disable whether the offset list is used.	enable
<b>config redistribute {bgp   connected   isis   ospf6   static}</b>		Redistribute configuration.
status {disable   enable}	Enable or disable whether the routes are redistributed.	disable
metric <metric_int>	Enter the metric of the redistributed routes. The value range is between 0 and 16.	0
route-map <route-map_str>	Enter the route map name to filter the redistributed routes. Only the route maps for this protocol are listed.	No default

## config router route-map

Use this command to configure a route map for BGP, IS-IS, OSPF, or RIP routing.

**NOTE:** You must have an advanced features license to use BGP, IS-IS, OSPF, or RIP routing.

### Syntax

```
config router route-map
edit <route-map_str>
```

```

set comments <comments_str>
set protocol {bgp | isis | isis6 | ospf | ospf6 | rip | ripng | zebra}
config rule
  edit <rule_int>
    set action {deny | permit}
    set match-as-path <string>
    set match-community <string>
    set match-interface {<interface_str> | internal | mgmt}
    set match-ip-address <address_str>
    set match-ip6-address <access-list6 or prefix-list6>
    set match-ip-nexthop <nexthop_str>
    set match-metric <metric_int>
    set match-origin {egp | igp | incomplete | none}
    set match-tag <tag_int>
    set set-aggregator-as <1-4294967295>
    set set-aggregator-ip <IPv4_address>
    set set-aspath <1-4294967295>
    set set-atomic-aggregate {enable | disable}
    set set-community-delete <string>
    set set-community <community>
    set set-extcommunity-rt <community>
    set set-extcommunity-soo <community>
    set set-ip-nexthop <class_ipv4>
    set set-ip6-nexthop <IPv6_address>
    set set-ip6-nexthop-local <IPv6_address>
    set set-local-preference <1-4294967295>
    set set-metric <setmetric_int>
    set set-metric-type {1 | 2}
    set set-origin {egp | igp | incomplete | none}
    set set-originator-id <IP_address>
    set set-tag <settag_int>
    set set-weight <0-2147483647>
  end
end
end

```

Variable	Description	Default
<routemap_str>	Enter the name for the individual route map.	No default
comments <comments_str>	Enter a descriptive comment.	No default
protocol {bgp   isis   isis6   ospf   ospf6   rip   ripng   zebra}	Mandatory. Set the protocol to BGP, IS-IS, OSPF (IPv4 or IPv6), RIP (IPv4 or IPv6), or the core router daemon.	No default
<b>config rule</b>	Configure the route-map rule.	
<rule_int>	Enter the rule identifier.	No default
action {deny   permit}	Set whether the rule permits or denies routes that match this rule.	permit
match-as-path <string>	Match the BGP Autonomous System (AS) path list.	No default
match-community <string>	Match the BGP community list.	No default

Variable	Description	Default
match-interface {<interface_str>   internal   mgmt}	Set which interface will be matched.	No default
match-ip-address <address_str>	Match the IPv4 address permitted by the IPv4 access list or IPv4 prefix list.	No default
match-ip6-address <access-list6 or prefix-list6>	Match the IPv6 address permitted by the IPv6 access list or IPv6 prefix list.	No default
match-ip-nexthop <nexthop_str>	Match the next-hop IP address passed by the access list or prefix list.	No default
match-metric <metric_int>	Enter the metric to be matched for redistributed routes. The value range is 0-2147483647.	0
match-origin {egp   igp   incomplete   none}	Match the BGP origin code: <ul style="list-style-type: none"> <li>• egp—Set the value to the NLRI learned from the Exterior Gateway Protocol (EGP).</li> <li>• igp—Set the value to the NLRI learned from a protocol internal to the originating AS.</li> <li>• incomplete—Match routes that were learned some other way (for example, through redistribution).</li> <li>• none—Disable the matching of BGP routes based on the origin of the route.</li> </ul>	none
match-tag <tag_int>	Enter the tag to be matched. The value range is 0-2147483647.	0
set-aggregator-as <1-4294967295>	Set the BGP aggregator AS.	No default
set-aggregator-ip <IPv4_address>	Set the IPv4 address for the BGP aggregator.  This option is visible only when set-aggregator-as is set.	0.0.0.0
set-aspath <1-4294967295>	Prepend the BGP AS path attribute. Use quotation marks for repeating numbers, for example: "1 1 2"	No default
set-atomic-aggregate {enable   disable}	Enable or disable the BGP atomic aggregate attribute.	disable
set-community-delete <string>	Delete communities matching the community list.	No default
set-community <community>	Set the BGP community attribute: <ul style="list-style-type: none"> <li>• Use decimal notation to set a specific COMMUNITY attribute for the route. The</li> </ul>	No default

Variable	Description	Default
	<p>value has the syntax AA:NN, where AA represents an AS, and NN is the community identifier. Delimit complex expressions with double-quotation marks (for example, "123:234 345:456").</p> <ul style="list-style-type: none"> <li>To make the route part of the Internet community, select internet.</li> <li>To make the route part of the LOCAL_AS community, select local-AS.</li> <li>To make the route part of the NO_ADVERTISE community, select no-advertise.</li> <li>To make the route part of the NO_EXPORT community, select no-export.</li> </ul>	
set-extcommunity-rt <community>	Set the Route-Target extended community: AA:NN	No default
set-extcommunity-soo <community>	Set the Site-of-Origin extended community: AA:NN	No default
set-ip-nexthop <class_ipv4>	Enter the IPv4 address of the next hop.	0.0.0.0
set-ip6-nexthop <IPv6_address>	Enter the IPv6 global address of the next hop.	No default
set-ip6-nexthop-local <IPv6_address>	Enter the IPv6 local address of the next hop.	No default
set-local-preference <1-4294967295>	Set the BGP local-preference path attribute.	0
set-metric <setmetric_int>	Enter the route metric value. The value range is 0-2147483647.	0
set-metric-type {1   2}	Set the metric type to external-type1 or external-type2.	external-type1
set-origin {egp   igp   incomplete   none}	<p>Set the BGP origin code:</p> <ul style="list-style-type: none"> <li>egp—Set the value to the NLRI learned from the Exterior Gateway Protocol (EGP).</li> <li>igp—Set the value to the NLRI learned from a protocol internal to the originating AS.</li> <li>incomplete—If not egp or igp.</li> <li>none—Disable the ORIGIN attribute.</li> </ul>	none
set-originator-id <IP_address>	Set the BGP originator ID attribute.	0.0.0.0
set-tag <settag_int>	Enter the route tag value. The value range is 0-2147483647.	0
set-weight <0-2147483647>	Set the BGP weight for the routing table.	0

## Example

This example shows how to configure the RIP router and add authentication:

```
config router route-map
  edit myroutemap
    set comments "route map for RIP routing"
    set protocol rip
  config rule
    edit 1
      set action permit
      set match-interface internal
      set match-metric 12
      set match-tag 36
      set set-ip-nexthop 128.8.0.0
      set auth-mode text
      set set-metric 48
      set set-tag 72
    end
  end
```

## config router setting

Use this command to filter incoming protocol routes in RIB. You can filter protocol routes so that they are not added in the RIB routing table.

**NOTE:** You must have an advanced features license to use BGP, IS-IS, OSPF, or RIP routing.

## Syntax

```
config router setting
  config filter-list
    edit <filter_list_ID>
      set protocol {any | any6 | bgp | bgp6 | isis | isis6 | ospf | ospf6 | rip | ripng |
        static | static6}
      set route-map <route_map_name>
    end
  end
```

Variable	Description	Default
<filter_list_ID>	Enter a filter-list identifier.	No default
protocol {any   any6   bgp   bgp6   isis   isis6   ospf   ospf6   rip   ripng   static   static6}	Specify which protocol routes that the filter will be applied to: <ul style="list-style-type: none"> <li>any: any IPv4 protocol.</li> <li>any6: any IPv6 protocol.</li> <li>bgp: IPv4 BGP.</li> <li>bgp6: IPv6 BGP.</li> <li>isis: IPv4 IS-IS.</li> <li>isis6: IPv6 IS-IS.</li> <li>ospf: IPv4 OSPF.</li> <li>ospf6: IPv6 OSPF.</li> <li>rip: IPv4 RIP.</li> </ul>	No default



Variable	Description	Default
	<ul style="list-style-type: none"> <li>• ripng: IPv6 RIP.</li> <li>• static: IPv4 static.</li> <li>• static6: IPv6 static.</li> </ul>	
route-map <route_map_name>	Enter the route map name. Only a route map created with the protocol set to <code>zebra</code> can be applied here.	No default

## Example

This example shows how to filter incoming protocol routes in RIB:

```
config router setting
  config filter-list
    edit 2
      set protocol ospf
      set route-map myroutemap
    end
  end
```

## config router static

Use this command to add, edit, or delete static routes for IPv4 traffic.

You add static routes to manually control traffic exiting the FortiSwitch unit. You configure routes by specifying destination IP addresses and network masks and adding gateways for these destination addresses. Gateways are the next-hop routers to which traffic that matches the destination addresses in the route are forwarded.

## Syntax

```
config router static
  edit <sequence_number>
    set bfd {enable | disable}
    set blackhole {enable | disable}
    set comment <comment_str>
    set device <interface_name>
    set distance <1-255>
    set dst <destination-address_IPv4mask>
    set dynamic-gateway {enable | disable}
    set gateway <gateway-address_IPv4>
    set status {enable | disable}
    set vrf <string>
  end
```

Variable	Description	Default
<sequence_number>	Enter a sequence number for the static route.	No default
bfd {enable   disable}	Enable or disable Bidirectional Forwarding for the route gateway.	disable
blackhole {enable   disable}	Enable or disable dropping all packets that match this route.	disable

Variable	Description	Default
comment <comment_str>	Optionally enter a descriptive comment.	No default
device <interface_name>	Enter the name of the interface through which to route traffic. Enter '?' to see a list of interfaces.	No default
distance <1-255>	Enter the administrative distance for the route. The range is an integer from 1-255.	10
dst <destination-address_ IPv4mask>	Enter the destination IPv4 address and network mask for this route. You can enter 0.0.0.0/0 to create a new static default route.	0.0.0.0 0.0.0.0
dynamic-gateway {enable   disable}	When enabled, the route gateway IP is obtained using DHCP running on the provided route's device interface.	disable
gateway <gateway-address_ IPv4>	Enter the IPv4 address of the next-hop router to which traffic is forwarded.	No default
status {enable   disable}	Enable this setting for the route to be added to the routing table.	enable
vrf <string>	Assign the specified virtual routing and forwarding (VRF) instance to this static route.  After the static route is created, the VRF instance cannot be changed or unset.	No default

## Example

This example shows how to configure a static route:

```
config router static
  edit 1
    set gateway 192.168.0.10
    set status enable
  end
end
```

## config router static6

Use this command to add, edit, or delete static routes for IPv6 traffic.

You add static routes to manually control traffic exiting the FortiSwitch unit. You configure routes by specifying destination IP addresses and network masks and adding gateways for these destination addresses. Gateways are the next-hop routers to which traffic that matches the destination addresses in the route are forwarded.

## Syntax

```
config router static6
  edit <sequence_number>
    set bfd {enable | disable}
    set blackhole {enable | disable}
    set comment <comment_str>
    set device <interface_name>
    set distance <1-255>
```

```

set dst <destination-address_IPv6mask>
set gateway <gateway-address_IPv6>
set status {enable | disable}
set vrf <string>
end

```



The `dst` and `gateway` fields are required when `blackhole` is disabled. When `blackhole` is enabled, the `dst` field is required. All other fields are optional.

Variable	Description	Default
<sequence_number>	Enter a sequence number for the static route.	No default
bfd {enable   disable}	Enable or disable bidirectional forwarding detection (BFD) for the gateway.	disable
blackhole {enable   disable}	Enable or disable dropping all packets that match this route.	disable
comment <comment_str>	Optionally enter a descriptive comment.	No default
device <interface_name>	Enter the name of the interface through which to route traffic. Enter '?' to see a list of interfaces.	No default
distance <1-255>	Enter the administrative distance for the route. The range is an integer from 1-255.	10
dst <destination-address_IPv6mask>	Enter the destination IPv6 address and network mask for this route.	::/0
gateway <gateway-address_IPv6>	Enter the IPv6 address of the next-hop router to which traffic is forwarded.	::
status {enable   disable}	Enable this setting for the route to be added to the routing table.	enable
vrf <string>	Assign the specified virtual routing and forwarding (VRF) instance to this static route. After the static route is created, the VRF instance cannot be changed or unset.	No default

## Example

This example shows how to configure a static route for IPv6 traffic:

```

config router static6
edit 1
set dst 5555::/64
set gateway 4000::2
set status enable
end
end

```

## config router vrf

Use these commands to create virtual routing and forwarding (VRF) instances.

### Syntax

```
config router vrf
  edit <VRF_name>
    set vrfid <integer>
  end
```

Variable	Description	Default
<VRF_name>	Enter the name of the VRF instance. The name cannot match the name of any switch virtual interface (SVI).	No default
vrfid <integer>	Set the VRF identifier. The range of values is 1-1023. You cannot use 252, 253, 254, or 255. After the VRF instance is created, the VRF ID cannot be changed.	0

### Example

This example shows how to configure two VRF instances:

```
config router vrf
  edit vrfv4
    set vrfid 1
  next
  edit vrfv6
    set vrfid 2
  next
end
```

## config switch

Use the `config switch` commands to configure options related to switching functionality:

- [config switch acl 802-1X on page 85](#)
- [config switch acl egress on page 87](#)
- [config switch acl ingress on page 89](#)
- [config switch acl policer on page 92](#)
- [config switch acl prelookup on page 93](#)
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## config switch acl 802-1X

Use this command to configure an 802.1x RADIUS dynamic ingress policy.

### Syntax

```
config switch acl 802-1X
  edit <policy_ID>
    set description <string>
    set filter-id <string>
    config access-list-entry
      edit <ingress_policy_ID>
        set description <string>
        set group <integer>
        config action
          set count {enable | disable}
```

```

        set drop {enable | disable}
    end
    config classifier
        set dst-ip-prefix <IP_address_and_netmask>
        set dst-mac <MAC_address>
        set ether-type <integer>
        set service <service_name>
        set src-ip-prefix <IP_address_and_netmask>
        set src-mac <MAC_address>
    end
next
end
next
end

```

Variable	Description	Default
<policy-id>	Enter the unique ID number of this policy.	No default
description <string>	Enter a description or other information about the policy. The description is limited to 63 characters. Enclose the string in single quotes to enter special characters or spaces.	No default
filter-id <string>	Enter the filter-id of the policy. <b>NOTE:</b> Changing the name of filter-id after authentication causes errors in the output of the <code>diagnose switch 802-1x status-dacl</code> command when the session is using filter-id.	No default
<b>config access-list-entry</b>		
<ingress_policy_ID>	Enter the ingress policy identifier.	No default
description <string>	Enter a description of the policy.	No default
group <integer>	Enter the group ID of the policy. You can only enter 1.	1
<b>config action</b>		
count {enable   disable}	Enable or disable the count action.	disable
drop {enable   disable}	Enable or disable the drop action.	disable
<b>config classifier</b>		
dst-ip-prefix <IP_address_and_netmask>	Enter the destination IP address and subnet mask to be matched.	0.0.0.0 0.0.0.0
dst-mac <MAC_address>	Enter the destination MAC address to be matched.	00:00:00:00:00:00
ether-type <integer>	Enter the Ethernet type to be matched.	0x0000
service <service_name>	Enter the service name to be matched.	No default
src-ip-prefix <IP_address_and_netmask>	Enter the source IP address and subnet mask to be matched.	0.0.0.0 0.0.0.0
src-mac <MAC_address>	Enter the source MAC address to be matched.	00:00:00:00:00:00

## Example

This example shows how to configure an 802.1x RADIUS dynamic ingress policy.

```
config switch acl 802-1X
  edit 1
    set description "Test Filter-Id"
    set filter-id "Testing"
    config access-list-entry
      edit 1
        set description "Test ACL entry"
        config action
          set count enable
          set drop enable
        end
        config classifier
          set dst-ip-prefix 192.168.0.0 255.255.255.0
          set ether-type 0x0800
          set service "filter-id-service1"
          set src-ip-prefix 192.168.0.0 255.255.255.0
          set src-mac 00:00:00:00:00:00
        end
      end
    next
  end
next
end
```

## config switch acl egress

Use this command to configure an access control list (ACL) for an egress policy.

### Syntax

```
config switch acl egress
edit <policy_ID>
  set description <string>
  set interface <port_name>
  set schedule <schedule_name>
  set status {active | inactive}
  config classifier
    set cos <802.1Q CoS value to match>
    set dscp <DSCP value to match>
    set dst-ip-prefix <IP_address> <mask>
    set dst-mac <MAC_address>
    set ether-type <integer>
    set service <service_ID>
    set src-ip-prefix <IP_address> <mask>
    set src-mac <MAC_address>
    set vlan-id <VLAN_ID>
  end
  config action
    set count {enable | disable}
    set drop {enable | disable}
    set mirror <mirror_session>
    set outer-vlan-tag <integer>
```

```

    set policer <policer>
    set redirect <interface_name>
    set remark-dscp <0-63>
end
end

```

Variable	Description	Default
<policy-id>	Enter the unique ID number of this policy.	No default
description <string>	Enter a description or other information about the policy. The description is limited to 63 characters. Enclose the string in single quotes to enter special characters or spaces.	No default
interface <port_name>	Interface that the policy applies to.	No default
schedule <schedule_name>	Select a schedule for when the ACL policy will be enforced.  The schedule must have been defined already with the <code>config system schedule</code> command.	No default
status {active   inactive}	Make the egress ACL policy active or inactive.	active
<b>config classifier</b>		
cos <802.1Q CoS value to match>	Enter the 802.1Q CoS value to match.	No default
dscp <DSCP value to match>	Enter the DSCP value to match.	No default
dst-ip-prefix <IP_address> <mask>	Destination IP address and subnet mask to be matched.	0.0.0.0 0.0.0.0
dst-mac <MAC_address>	Destination MAC address to be matched.	00:00:00:00:00:00
ether-type <integer>	Ethernet type to be matched.	0x0000
service <service_ID>	Service type to be matched.	No default
src-ip-prefix <IP_address> <mask>	Source IP address and subnet mask to be matched.	0.0.0.0 0.0.0.0
src-mac <MAC_address>	Source MAC address to be matched.	00:00:00:00:00:00
vlan-id <VLAN_ID>	VLAN identifier to be matched.	0
<b>config action</b>		
count {enable   disable}	Enable or disable the <b>count</b> action.	disable
drop {enable   disable}	Enable or disable the <b>drop</b> action.	disable
mirror <mirror_session>	Mirror session name.	No default
outer-vlan-tag <integer>	Outer VLAN tag.	0
policer <policer>	Identifier of the policer to associate with this policy. To create a policer, see <a href="#">config switch acl policer on page 92</a> .	0



Variable	Description	Default
redirect <interface_name>	Redirect interface name.	No default
remark-dscp <0-63>	Set the DSCP marking value.	No default

## config switch acl ingress

Use this command to configure an ACL for an ingress policy. Starting in FortiSwitchOS 6.2.0, you can create groups for multiple ingress ACLs.

### Syntax

```
config switch acl ingress
edit <policy-id>
    set description <string>
    set group <group_ID>
    set ingress-interface <port > [<port > ... <port >]
    set ingress-interface-all {enable | disable}
    set schedule <schedule_name>
    set status {active | inactive}
    config classifier
        set cos <802.1Q CoS value to match>
        set dscp <DSCP value to match>
        set src-mac <mac>
        set dst-mac <mac>
        set ether-type <integer>
        set src-ip-prefix <IP address> <mask>
        set dst-ip-prefix <IP address> <mask>
        set service <service-id>
        set vlan-id <vlan-id>
    end
    config action
        set cos-queue <0 - 7>
        set count {enable | disable}
        set cpu-cos-queue <integer>
        set drop {enable | disable}
        set egress-mask {<physical_port_name> | internal}
        set mirror <mirror_session>
        set outer-vlan-tag <integer>
        set policer <policer>
        set redirect <interface_name>
        set redirect-bcast-cpu {enable | disable}
        set redirect-bcast-no-cpu {enable | disable}
        set redirect-physical-port <list of physical ports to redirect>
        set remark-cos <0-7>
        set remark-dscp <0-63>
    end
end
```

Variable	Description	Default
<policy-id>	Enter the unique ID number of this policy.	No default

Variable	Description	Default
description <string>	Enter a description or other information about the policy. The description is limited to 63 characters. Enclose the string in single quotes to enter special characters or spaces.	No default
group <group_ID>	Enter the group identifier of the policy. The range of group identifiers varies among the different platforms.  Starting in FortiSwitchOS 6.2.0, you can create groups for multiple ingress ACLs.	1
ingress-interface <port > [<port > ... <port >]	If ingress-interface-all is disabled, enter the interface list to which the policy is bound on the ingress.	No default
ingress-interface-all {enable   disable}	If enabled, policy is bound to all interfaces.	disable
schedule <schedule_name>	Select a schedule for when the ACL policy will be enforced.  The schedule must have been defined already with the <code>config system schedule</code> command.	No default
status {active   inactive}	Make the ingress ACL policy active or inactive.	active
<b>config classifier</b>		
cos <802.1Q CoS value to match>	Enter the 802.1Q CoS value to match.	No default
dscp <DSCP value to match>	Enter the DSCP value to match.	No default
src-mac	Enter the source MAC address to be matched.	00:00:00:00:00:00
dst-mac	Enter the destination MAC address to be matched.	00:00:00:00:00:00
ether-type	Enter the Ethernet type to be matched.	0x0000
src-ip-prefix	Enter the source IP address and subnet mask to be matched.	0.0.0.0 0.0.0.0
dst-ip-prefix	Enter the destination IP address and subnet mask to be matched.	0.0.0.0 0.0.0.0
service	Enter the service type to be matched.	No default
vlan-id	Enter the VLAN identifier to be matched.	0
<b>config action</b>		
cos-queue <0 - 7>	CoS queue number (0 - 7).	0
count	Enable or disable the <b>count</b> action.	disable

Variable	Description	Default
cpu-cos-queue <integer>	CPU CoS queue number. This CoS queue is only used if the packets reach the CPU. Enter <code>set cpu-cos-queue ?</code> to see the value range.	disabled
drop	Enable or disable the <b>drop</b> action.	disable
egress-mask {<physical_port_name>   internal}	List of physical ports to be configured in egress mask.	No default
mirror <mirror_session>	Mirror session name.	No default
outer-vlan-tag	Outer VLAN tag.	4093
policer	Identifier of the policer to associate with this policy. To create a policer, see <a href="#">config switch acl policer on page 92</a> .	1
redirect <interface_name>	Redirect interface name.	No default
redirect-bcast-cpu	Redirect broadcast to all ports including the CPU.	disable
redirect-bcast-no-cpu	Redirect broadcast to all ports excluding the CPU.	disable
redirect-physical-port	List of ports to redirect the packet.	No default
remark-cos <0-7>	Set the CoS marking value. The range is 0-7.	No default
remark-dscp <0-63>	Set the DSCP marking value. The range is 0-63.	No default

## Examples

In the following example, traffic from VLAN 3 is blocked to a specified destination IP subnet (10.10.0.0/16) but allowed to all other destinations:

```
config switch acl ingress
  edit 1
    config action
      set count enable
      set drop enable
    end
    config classifier
      set dst-ip-prefix 10.10.0.0 255.255.0.0
      set vlan-id 3
    end
    set ingress-interface-all enable
    set status inactive
  next
  edit 2
    config classifier
      set vlan-id 3
    end
    set ingress-interface-all enable
    set status active
  next
end
```

In the following example, packets are classified by matching both the CoS and DSCP values. Both the CoS and DSCP marking values are set:

```
config switch acl ingress
  edit 1
    config classifier
      set src-mac 11:22:33:aa:bb:cc
      set cos 2
      set dscp 10
    end
    config action
      set count enable
      set remark-cos 4
      set remark-dscp 20
    end
  set ingress-interface port2
  set status active
end
```

## config switch acl policer

Use this command to configure an ACL policer for egress or ingress policies.

### Syntax

```
config switch acl policer
  edit <policer index>
    set description <string>
    set guaranteed-bandwidth <bandwidth_value>
    set guaranteed-burst <in_bytes>
    set maximum-burst <in_bytes>
    set type {egress | ingress}
  end
```

Variable	Description	Default
<policer index>	Enter the index for this ACL policer	No default
description <string>	Enter a text description for the policer.	No default
guaranteed-bandwidth <bandwidth_value>	Enter the amount of bandwidth guaranteed to be available for traffic controlled by the policy. The value range is 0 to 16 776 000 Kbits/second.	0
guaranteed-burst <in_bytes>	Guaranteed burst size in bytes (max value = 4294967295)	0
maximum-burst <in_bytes>	Maximum burst size in bytes (max value = 4294967295)	0
type {egress   ingress}	Specify whether the policer is for egress or ingress policies.	ingress

### Example

This example shows how to configure an ACL policer for egress policies.

```
config switch acl policer
  edit 1
```

```

    set description policer1
    set guaranteed-bandwidth 8776000
    set guaranteed-burst 858993459
    set maximum-burst 4294967295
    set type egress
end

```

## config switch acl prelookup

Use this command to configure an ACL for a lookup policy.

### Syntax

```

config switch acl prelookup
edit <policy_ID>
    set description <string>
    set interface <port_name>
    set schedule <schedule_name>
    set status {active | inactive}
    config classifier
        set cos <802.1Q CoS value to match>
        set dscp <DSCP value to match>
        set dst-ip-prefix <IP_address> <mask>
        set dst-mac <MAC_address>
        set ether-type <integer>
        set service <service_ID>
        set src-ip-prefix <IP_address> <mask>
        set src-mac <MAC_address>
        set vlan-id <VLAN_ID>
    end
    config action
        set count {enable | disable}
        set cos-queue <0-7>
        set drop {enable | disable}
        set outer-vlan-tag <integer>
        set remark-cos <0-7>
    end
end

```

Variable	Description	Default
<policy-id>	Enter the unique ID number of this policy.	No default
description <string>	Enter a description or other information about the policy. The description is limited to 63 characters. Enclose the string in single quotes to enter special characters or spaces.	No default
interface <port_name>	Interface that the policy applies to.	No default
schedule <schedule_name>	Select a schedule for when the ACL policy will be enforced. The schedule must have been defined already with the <code>config system schedule</code> command.	No default

Variable	Description	Default
status {active   inactive}	Make the prelookup ACL policy active or inactive.	active
<b>config classifier</b>		
cos <802.1Q CoS value to match>	Enter the 802.1Q CoS value to match.	No default
dscp <DSCP value to match>	Enter the DSCP value to match.	No default
dst-ip-prefix <IP_address> <mask>	Destination IP address and subnet mask to be matched.	0.0.0.0 0.0.0.0
dst-mac <MAC_address>	Destination MAC address to be matched.	00:00:00:00:00:00
ether-type <integer>	Ethernet type to be matched.	0x0000
service <service_ID>	Service type to be matched.	No default
src-ip-prefix <IP_address> <mask>	Source IP address and subnet mask to be matched.	0.0.0.0 0.0.0.0
src-mac <MAC_address>	Source MAC address to be matched.	00:00:00:00:00:00
vlan-id <VLAN_ID>	VLAN identifier to be matched.	0
<b>config action</b>		
count {enable   disable}	Enable or disable the <i>count</i> action.	disable
cos-queue <0-7>	CPU CoS queue number (20-29). Only if packets reach to CPU. The value range is 20-29.	No default
drop {enable   disable}	Enable or disable the <i>drop</i> action.	disable
outer-vlan-tag <integer>	Outer VLAN tag.	0
remark-cos <0-7>	Set the CoS marking value. The range is 0-7.	No default

## config switch acl service custom

Use this command to customize one of the ACL services.

### Syntax

```
config switch acl service custom
edit <service name>
    set comment <string>
    set color <0-32>
    set protocol {ICMP | IP | TCP/UDP/SCTP}
    set icmp-type <0-255>
    set icmp-code <0-255>
    set protocol-number <IP protocol number>
    set sctp-portrange <dstportlow_int>[-<dstporthigh_int>:<srcportlow_int>-<srcporthigh_int>]
    set tcp-portrange <dstportlow_int>[-<dstporthigh_int>:<srcportlow_int>-<srcporthigh_int>]
```

```

        set udp-portrange <dstportlow_int>[-<dstporthigh_int>:<srcportlow_int>-<srcporthigh_int>]
    end
end

```

Variable	Description	Default
<service name>	Enter the name of this custom service.	No default
comment <string>	Add comments for the custom service.	No default
color <0-32>	Set the icon color to use in the Web-based manager. A value of zero sets the default color (1).	0
protocol {ICMP   IP   TCP/UDP/SCTP}	Select the protocol used by the service. These protocols are available when explicit-proxy is enabled.	TCP/UDP/SCTP
icmptype <0-255>	If you set the protocol to ICMP, set the ICMP type.	0
icmpcode <0-255>	If you set the protocol to ICMP, set the ICMP code.	0
protocol-number	For an IP service, enter the IP protocol number.	0
sctp-portrange	For SCTP services, enter the destination and source port ranges.	No default
tcp-portrange	For TCP services, enter the destination and source port ranges.	No default
udp-portrange	For UDP services, enter the destination and source port ranges.	No default

#### Notes:

- **srcport\_low** and **srcport\_high** can be omitted if the value pair is 1-65535
- **dstport\_high** can be omitted if **dstport\_low** is equal to **dstport\_high**
- **srcport\_low** and **srcport\_high** can be omitted if the value pair is 1-65535
- **dstport\_high** can be omitted if **dstport\_low** is equal to **dstport\_high**

## Example

In the following example, Server Message Block (SMB) traffic received on port 1 is mirrored to port 3. SMB protocol uses port 445:

```

config switch acl service custom
    edit "SMB"
        set tcp-portrange 445
    next
end
config switch acl ingress # apply policy to port 1 ingress and send to port 3
    edit 1
        set description "cnt_n_mirror_smb"
        set ingress-interface "port1"
        config action
            set count enable
            set mirror "port3"
        end
    end

```

```
config classifier
  set service "SMB"
  set src-ip-prefix 20.20.20.100 255.255.255.255
  set dst-ip-prefix 100.100.100.0 255.255.255.0
end
next
end
```

## config switch acl settings

Use this command to configure the global ACL settings

### Syntax

```
config switch acl settings
  set density-mode {disable | enable}
  set trunk-load-balance {disable | enable}
end
```

Variable	Description	Default
density-mode	Enable or disable density mode.	disable
trunk-load-balance	Enable or disable trunk-load-balancing for ACL actions.	enable

### Example

The following example configures the global ACL settings:

```
config switch acl settings
  set density-mode enable
  set trunk-load-balance enable
end
```

## config switch auto-isl-port-group

Use this command to create a multi-tiered MCLAG trunk when the FortiSwitch unit is managed by a FortiGate unit.

### Syntax

```
config switch auto-isl-port-group
  edit <trunk_name>
    set members <one or more ports>
  end
```

### Example

The following example creates two trunks for a multi-tiered MCLAG:

```
config switch auto-isl-port-group
  edit "mclag-core1"
    set members "port1" "port2"
  next
```



```
edit "mclag-core2"
    set members "port3" "port4"
end
```

## config switch auto-network

Use this command to automatically form an inter-switch link (ISL) between two switches.

### Syntax

```
config switch auto-network
    set mgmt-vlan <1-4094>
    set status {enable | disable}
end
```

Variable	Description	Default
mgmt-vlan <1-4094>	Set the VLAN to use for the native VLAN on ISL ports and the native VLAN on the internal switch interface.	4094
status {enable   disable}	Enable or disable whether an ISL is automatically formed between two switches.	disable

### Example

The following example enables the automatic formation of an ISL between two switches:

```
config switch auto-network
    set mgmt-vlan 200
    set status enable
end
```

## config switch global

Use this command to configure system-wide FortiSwitch settings.

### Syntax

```
config switch global
    set auto-fortilink-discovery {enable | disable}
    set auto-isl {enable | disable}
    set auto-isl-port-group <0-9>
    set auto-stp-priority {enable | disable}
    set dhcp-snooping-database-export {disable | enable}
    set dmi-global-all {enable | disable}
    set flapguard-retain-trigger {enable | disable}
    set flood-unknown-multicast {enable | disable}
    set fortilink-heartbeat-timeout <0-300>
    set fortilink-p2p-native-vlan <integer>
    set fortilink-p2p-tpid <integer>
    set fortilink-vlan-optimization {enable | disable}
    set forti-trunk-dmac <xx:xx:xx:xx:xx:xx>
    set ip-mac-binding {enable | disable}
```

```

set l2-memory-check {enable | disable}
set l2-memory-check-interval <number_of_seconds>
set log-mac-limit-violations {enable | disable}
set log-source-guard-violations {enable | disable}
set loop-guard-tx-interval <0-30>
set mac-aging-interval <seconds>
set mac-violation-timer <integer>
set max-frame-size <bytes_int>
set max-path-in-ecmp-group <integer>
set mclag-igmpsnooping-aware {enable | disable}
set mclag-peer-info-timeout <integer>
set mclag-port-base <integer>
set mclag-split-brain-all-ports-down {enable | disable}
set mclag-split-brain-detect {enable | disable}
set mclag-split-brain-priority <0-100>
set mclag-stp-aware {enable | disable}
set mirror-qos <0-7>
set name <string>
set neighbor-discovery-to-cpu {enable | disable}
set packet-buffer-mode {store-forward | cut-through}
set poe-alarm-threshold <threshold (percent of total power budget) above which an alarm
    event is generated>
set poe-guard-band <integer>
set poe-power-budget <integer>
set poe-power-mode {first-come-first-served | priority}
set poe-pre-standard-detect {disable | enable}
set qos-drop-policy {random-early-detection | taildrop}
set qos-red-probability <integer>
set reserved-mcast-to-cpu {enable | disable}
set source-guard-violation-timer <integer>
set trunk-hash-mode {default | enhanced}
set trunk-hash-unicast-src-port {enable | disable}
set trunk-hash-unkunicast-src-dst {enable | disable}
set virtual-wire-tpid <0x0001-0xfffe>
config port-security
    set link-down-auth {no-action | set-unauth}
    set mab-reauth {enable | disable}
    set max-reauth-attempt <0-15>
    set quarantine-vlan {enable | disable}
    set reauth-period <1-1440>
    set tx-period <12-60>
end
end

```

Variable	Description	Default
auto-fortilink-discovery {enable   disable}	Enable or disable the capability for the FortiGate unit to automatically discover the FortiLink interface on the switch.	enable
auto-isl {enable   disable}	Enable or disable the capability to automatically form an inter-switch LAG.	enable
auto-isl-port-group <0-9>	Set the ISL port group. The range is 0-9.	0
auto-stp-priority {enable   disable}	Enable or disable the automatic assigned STP switch priority.	enable

Variable	Description	Default
dhcp-snooping-database-export {disable   enable}	Enable or disable whether the DHCP snooping database is exported to file.	disable
dmi-global-all {enable   disable}	Enable or disable DMI globally.	enable
flapguard-retain-trigger {enable   disable}	<p>Enable this setting to keep the “triggered” status in the output of the <code>diagnose flapguard status</code> command after a switch has been rebooted until the port has been reset with the <code>execute flapguard reset &lt;port_name&gt;</code> command.</p> <p>Disable this setting to reset the “triggered” status when the switch is rebooted.</p>	disable
flood-unknown-multicast {enable   disable}	Enable or disable whether to flood the VLAN with unknown multicast messages.	disable
fortilink-heartbeat-timeout <0-300>	Set how long before the FortiLink heartbeat times out. Set the value to 0 to disable the FortiLink heartbeat.	60
fortilink-p2p-native-vlan <integer>	Specify the native VLAN on the inter-switch link (ISL) when <code>fortilink-p2p</code> is enabled under the <code>config switch physical port</code> command.	4094
fortilink-p2p-tpid <integer>	<p>Set the FortiLink point-to-point TPID value. The range of values is 0x0001 to 0xfffe.</p> <p>This command is only available in FortiLink mode.</p>	0x8100
fortilink-vlan-optimization {enable   disable}	Enable or disable FortiLink VLAN optimization.	disable
forti-trunk-dmac <xx:xx:xx:xx:xx:xx>	Enter the destination MAC address to be used for FortiTrunk heartbeat packets.	02:80:c2:00:00:02
ip-mac-binding {enable   disable}	Enable or disable IP-MAC binding for the switch	disable
l2-memory-check {enable   disable}	Enable or disable whether FortiSwitchOS checks the size of the layer-2 table. When this feature is enabled, the <code>set l2-memory-check interval</code> command controls the frequency that the table is checked. When the table size is more than 75-percent full or less than 70-percent full, FortiSwitchOS adds a warning to the system log.	disable
l2-memory-check-interval <number_of_seconds>	When <code>l2-memory-check</code> is enabled, FortiSwitchOS checks the size of the layer-2 table at the specified interval. The range of values is 5-86400 seconds.	120

Variable	Description	Default
log-mac-limit-violations {enable   disable}	Enable or disable the logging of layer-2 learning limit violations for an interface or VLAN. The most recent violation that occurred on each interface or VLAN is logged. After that, no more violations are logged until the log is reset for the triggered interface or VLAN. Only the most recent 128 violations are displayed in the console. <b>NOTE:</b> This command is only displayed if your FortiSwitch model supports it.	disable
log-source-guard-violations {enable   disable}	Enable or disable logs for source guard violations on a system-wide level.	disable
loop-guard-tx-interval <0-30>	Enter the loop guard transmit interval. Value range is 1-30. The units is seconds.	3
mac-aging-interval <seconds>	Specify how often the learning-limit violation log is reset. The range is 10 to 1,000,000 seconds. Set to 0 to disable.	300
mac-violation-timer <integer>	How long (in minutes) violations of the layer-2 learning limit are kept in the log. The value range is 0-1500. Set to 0 to disable the timer.	0
max-frame-size <bytes_int>	Set the maximum frame size. The range is 68 to 16360. <b>NOTE:</b> For non-1xxE FortiSwitch units, this command is under the <code>config switch physical-port</code> command.	9216
max-path-in-ecmp-group <integer>	Set the maximum path in one ECMP group.	8
mclag-igmpsnooping-aware {enable   disable}	Enable this option to synchronize both query ports and group entries across peer MCLAG trunks. This option can be used in standalone mode and in FortiLink mode. <b>NOTE:</b> For IGMP snooping to work correctly in an MCLAG, you need to use the <code>set mclag-igmpsnooping-aware enable</code> command on all FortiSwitch units in the network topology and use the <code>set igmps-flood-reports enable</code> command on each MCLAG core FortiSwitch unit.	disable
mclag-peer-info-timeout <integer>	Enter the MCLAG peer info timeout. The value range is 30 to 600 seconds.	30
mclag-port-base <integer>	Set the MCLAG port base.	0
mclag-split-brain-all-ports-down {enable   disable}	When this option is enabled and a split-brain state occurs, the switch that goes dormant shuts down all ports before going dormant; the state of the ICL trunk ports is not changed.  When this option is disabled and a split-brain state occurs, the switch that goes dormant does not shut down any ports before going dormant.	disable

Variable	Description	Default
	This command is only available when <code>mclag-split-brain-detect</code> is enabled.	
<code>mclag-split-brain-detect {enable   disable}</code>	Enable or disable the detection of the MCLAG split-brain state.	disable
<code>mclag-split-brain-priority &lt;0-100&gt;</code>	When the split-brain state occurs, the switch with the lowest priority goes dormant. If both switches have the same priority, the switch with the lowest MAC address goes dormant when the split-brain state occurs.  This command is only available when <code>mclag-split-brain-detect</code> is enabled.	50
<code>mclag-stp-aware {enable   disable}</code>	Enable or disable whether the STP can be used within the MCLAG.	enable
<code>mirror-qos &lt;0-7&gt;</code>	Enter the quality of service (QoS) priority for packets mirrored by this FortiSwitch unit. Applies only to the FS-524D, FS-524D-FPOE, FS-548D, FS-548D-FPOE, FS-1048E, and FS-3032D models.	0
<code>name &lt;string&gt;</code>	Enter a name for the switch.	No default
<code>neighbor-discovery-to-cpu {enable   disable}</code>	Enable or disable the forwarding of reserved multicast packets to the CPU. Applies only to the 200 Series and 400 Series.	enable
<code>packet-buffer-mode {store-forward   cut-through}</code>	Set the switching mode to store-and-forward or cut-through for the main buffer of the FS-1024D, FS-1048D, or FS-3032D model.	store-forward
<code>poe-alarm-threshold &lt;threshold (percent of total power budget) above which an alarm event is generated&gt;</code>	Enter the threshold (a specified percentage of the total power budget) above which an alarm event is generated.	80
<code>poe-guard-band &lt;integer&gt;</code>	Enter the power (W) to reserve in case of a spike in PoE consumption.	19
<code>poe-power-budget &lt;integer&gt;</code>	Set or override the maximum power budget.	400
<code>poe-power-mode {first-come-first-served   priority}</code>	Set the PoE power mode to priority based or first-come, first-served.	priority
<code>poe-pre-standard-detect {disable   enable}</code>	Enable or disable PoE pre-standard detection.  <b>NOTE:</b> PoE pre-standard detection is a global setting for the following FortiSwitch models: FSR-112D-POE, FS-548D-FPOE, FS-524D-FPOE, FS-108D-POE, FS-224D-POE, FS-108E-POE, FS-108E-FPOE, FS-124E-POE, FS-124E-FPOE, 148F-POE, and 148F-FPOE. For the other FortiSwitch PoE models, PoE pre-standard detection is set on each port.	disable

Variable	Description	Default
qos-drop-policy {random-early-detection   taildrop}	<p>Set the CoS queue drop policy.</p> <ul style="list-style-type: none"> <li>taildrop — When the queue is full, new packets are dropped.</li> <li>random-early-detection — As the queue fills, the probability increases that packets will be dropped.</li> </ul> <p><b>NOTE:</b> This command is available only for the FS-108E, FS-108E-POE, FS-108E-FPOE, FS-124E, FS-124E-POE, FS-124E-FPOE, FS-148E, and FS-148E-POE models.</p>	taildrop
qos-red-probability <integer>	<p>Set the QoS RED/WRED drop probability. The FS-108E, FS-108E-POE, FS-108E-FPOE, FS-124E, FS-124E-POE, and FS-124E-FPOE models support 0-100 percent. The FS-148E, FS-148E-POE, and FS-148E-FPOE models support 0-25 percent.</p> <p><b>NOTE:</b> This command is available only for the FS-108E, FS-108E-POE, FS-108E-FPOE, FS-124E, FS-124E-POE, FS-124E-FPOE, FS-148E, and FS-148E-POE models.</p>	12
reserved-mcast-to-cpu {enable   disable}	<p>Enable or disable the forwarding of IPv6 neighbor-discovery packets to the CPU. Applies only to the 200 Series and 400 Series.</p>	enable
source-guard-violation-timer <integer>	<p>Enter the number of minutes for a global timeout for source guard violations. The range of values is 0-1500. Set this option to 0 to disable it.</p> <p>This command is only available when <code>log-source-guard-violations</code> is enabled.</p>	0
trunk-hash-mode {default  enhanced}	<p>Set the trunk hash mode to default or enhanced</p>	default
trunk-hash-unicast-src-port {enable   disable}	<p>Enable or disable whether the trunk hashing algorithm for unicast packets uses the source port.</p>	disable
trunk-hash-unkunicast-src-dst {enable   disable}	<p>Enable or disable trunk hash for unknown unicast src-dst.</p>	enable
virtual-wire-tpid <0x0001-0xfffe>	<p>TPID value used by virtual-wires. The value range is from 0x0001 to 0xfffe.</p> <p>Choose a value unlikely to be seen as a TPID or ethertype in your network.</p>	0xdee5
<b>config port-security</b>		
link-down-auth	<p>If a link goes down, this setting determines if the affected devices needs to reauthenticate.</p> <ul style="list-style-type: none"> <li>set-unauth — revert all devices to the unauthenticated state. Each device will need to reauthenticate.</li> <li>no-action — if reauthentication is not required.</li> </ul>	set-unauth

Variable	Description	Default
mab-reauth {enable   disable}	Enable or disable whether MAB retries authentication before assigning a device to a guest VLAN for unauthorized users.	disable
max-reauth-attempt	If 802.1x authentication fails, this setting caps the number of attempts that the system will initiate. The range is from 0 to 15 where "0" disables the reauthentication attempts.	3
quarantine-vlan {enable   disable}	Enable or disable quarantine VLAN detection. Enable this setting to use quarantines with 802.1x MAC-based authentication in FortiLink mode.	enable
reauth-period	Defines how often the device needs to reauthenticate. If a session remains active beyond this number of minutes, the system requires the device to reauthenticate.	60
tx-period <12-60>	Specify how many seconds are allowed for the 802.1x reauthentication before it times out.	30

## Example

The following example configures system-wide FortiSwitch settings:

```
config switch global
  set auto-isl enable
  set dhcp-snooping-database-export enable
  set dmi-global-all enable
  set ip-mac-binding enable
  set loop-guard-tx-interval 15
  set mac-aging-interval 150
  set max-path-in-ecmp-group 4
  set mclag-peer-info-timeout 300
  set poe-alarm-threshold 40
  set poe-power-mode first-come-first-served
  set poe-guard-band 10
  set poe-pre-standard-detect enable
  set poe-power-budget 200
  set trunk-hash-mode enhanced
  set trunk-hash-unkunicast-src-dst enable
end
```

## config switch igmp-snooping globals

Use this command to configure global settings for IGMP snooping on the FortiSwitch unit.

### Syntax

```
config switch igmp-snooping globals
  set aging-time <integer>
  set leave-response-timeout <integer>
  set query-interval <10-1200>
end
```

Variable	Description	Default
aging-time <integer>	The maximum number of seconds to retain a multicast snooping entry for which no packets have been seen (15-3600).	300
leave-response-timeout <integer>	Enter the maximum number of seconds that the switch waits after sending a group-specific query in response to the leave message. The range of values is 1-20.	10
query-interval <10-1200>	Enter the maximum number of seconds between IGMP queries.	120

## Example

The following example configures global settings for IGMP snooping on the FortiSwitch unit:

```
config switch igmp-snooping globals
    set aging-time 150
    set leave-response-timeout 15
    set query-interval 200
end
```

## config switch interface

Use this command to configure FortiSwitch features on an interface.

**NOTE:** Settings under `config qnq` are for customer VLANs (C-VLANs). Other settings such as `set allowed-vlans`, `set native-vlan`, and `set vlan-tpid` are for service-provider VLANs (S-VLANs).

## Command

```
config switch interface
    edit <interface_name>
        set allowed-vlans {vlan1 vlan2 ...}
        set arp-inspection-trust {trusted | untrusted}
        set auto-discovery-fortilink {enable | disable}
        set auto-discovery-fortilink-packet-interval <3-300>
        set default-cos <0-7>
        set description <string>
        set discard-mode {all-tagged | all-untagged | none}
        set dhcp-snooping {trusted | untrusted}
        set dhcp-snoop-learning-limit-check {disable | enable}
        set dhcp-snooping-option82-trust {enable | disable}
        set edge-port {enabled | disabled}
        set igmp-snooping-flood-reports {enable | disable}
        set mcast-snooping-flood-traffic {enable | disable}
        set mld-snooping-flood-reports {enable | disable}
        set ip-mac-binding {enable | disable | global}
        set ip-source-guard {enable | disable}
        set learning-limit <0-128>
        set learning-limit-action {none | shutdown}
        set log-mac-event {enable | disable}
        set loop-guard {enabled | disabled}
        set loop-guard-timeout <0-120>
```



```

    set loop-guard-mac-move-threshold <0-100>
set nac {enable | disable}
set native-vlan <vlan_int>
set packet-sampler {enabled | disabled}
    set sample-direction {both | rx | tx}
set packet-sample-rate <0-99999>
set private-vlan {disabled | promiscuous sub-vlan}
set ptp-policy {<string> | default}
set qos-policy {<string> | default}
set rpvtst-port {enabled | disabled}
set security-groups <security-group-name>
set sflow-counter-interval <0-255>
set snmp-index <integer>
set sticky-mac {disable | enable}
set stp-bpdu-guard {disabled | enabled}
set stp-loop-protection {enabled | disabled}
set stp-root-guard {disabled | enabled}
set stp-state {enabled | disabled}
set trust-dot1p-map <string>
set trust-ip-dscp-map <string>
set untagged-vlans {vlan1 vlan2 ...}
set vlan-mapping-miss-drop {enable | disable}
set vlan-tpid <default | string>
config port-security
    set allow-mac-move {enable | disable}
    set eap-egress-tagged {enable | disable}
    set port-security-mode {none | 802.1X | 802.1X-mac-based | macsec}
        set auth-fail-vlan {enable | disable}
        set auth-fail-vlanid <VLAN_id>
        set authserver-timeout-period <3-15>
        set authserver-timeout-vlan {enable | disable}
        set authserver-timeout-vlanid <1-4094>
        set dacl {enable | disable}
        set eap-auto-untagged-vlans {enable | disable}
        set eap-passthru {disable | enable}
        set framevid-apply {disable | enable}
        set guest-auth-delay <integer>
        set guest-vlan {enable | disable}
        set guest-vlanid <VLAN_id>
        set mab-eapol-request <0-10>
        set mac-auth-bypass {enable | disable}
        set macsec-profile <MACsec_profile_name>
        set open-auth {enable | disable}
        set quarantine-vlan {enable | disable}
        set radius-timeout-overwrite {enable | disable}
    next
end
config raguard
    edit <ID>
        set raguard-policy <name_of_RA_guard_policy>
        set vlan-list <list_of_VLANS>
    next
end
config qnq
    set status {enable | disable}
    set add-inner <1-4095>
    set edge-type customer

```

```

    set priority {follow-c-tag | follow-s-tag}
    set remove-inner {enable | disable}
    set s-tag-priority <0-7>
    set vlan-mapping-miss-drop {enable | disable}
    config vlan-mapping
        edit <id>
            set description <string>
            set match-c-vlan <1-4094>
            set new-s-vlan <1-4094>
        next
    end
end
config vlan-mapping
    edit <id>
        set description <string>
        set direction {egress | ingress}
        set match-s-vlan <1-4094>
        set match-c-vlan <1-4094>
        set action {add | delete | replace}
        set new-s-vlan <1-4094>
    next
end
next
end

```

Variable	Description	Default
<interface_name>	Enter the name of the interface.	No default
allowed-vlans {vlan1 vlan2 ...}	Enter the names of the VLANs permitted on this interface.	No default
arp-inspection-trust {trusted   untrusted}	Set the interface to trusted or untrusted.	untrusted
auto-discovery- fortilink {enable   disable}	Enable or disable automatic discovery of the port used for FortiLink.	disable
auto-discovery- fortilink-packet- interval <3-300>	Enter the FortiLink packet interval for automatic discovery. The value range is 3 to 300 seconds.	5
default-cos <0-7>	Set the default CoS value for untagged packets. Integer in the range of 0 to 7.  The configured default CoS only applies if you also set <code>trust-dot1p-map</code> on the interface.  <b>NOTE:</b> The <code>set default-cos</code> command is not available on the following FortiSwitch models: 224D-FPOE, 248D, 424D, 424D-POE, 424D-FPOE, 448D, 448D-POE, 448D-FPOE, 224E, 224E-POE, 248E-POE, and 248E-FPOE.	0
description <string>	Enter a description of the interface.	No default

Variable	Description	Default
discard-mode {all-tagged   all-untagged   none}	Set the discard mode for this interface.	none
dhcp-snooping {trusted   untrusted}	Set the interface to trusted or untrusted.	untrusted
dhcp-snoop-learning-limit-check {disable   enable}	Enable or disable whether there is a limit for how many IP addresses are in the DHCP snooping binding database for this interface.	disable
dhcp-snooping-option82-trust {enable   disable}	Enable or disable (allow/disallow) DHCP packets with option-82 on an untrusted interface.	disable
edge-port {enabled   disabled}	Enable if the port does not have another switch connected to it.	disable
igmp-snooping-flood-reports {enable   disable}	<p>Enable or disable whether to flood IGMP-snooping reports to this interface.</p> <p><b>NOTE:</b> For IGMP snooping to work correctly in an MCLAG, you need to use the <code>set mclag-igmpsnooping-aware enable</code> command on all FortiSwitch units in the network topology and use the <code>set igmp-snooping-flood-reports enable</code> command on each MCLAG core FortiSwitch unit.</p>	disable
mcast-snooping-flood-traffic {enable   disable}	Enable or disable whether to flood multicast traffic to this interface.	disable
mld-snooping-flood-reports {enable   disable}	Enable or disable whether to flood MLD-snooping reports to this interface.	disable
ip-mac-binding {enable   disable   global}	Enable or disable IP-MAC binding for this interface. Set the value to 'global', the interface inherits the global ip-mac-binding configuration value.	disable
ip-source-guard {enable   disable}	Enable or disable IP source guard for this interface. After you enable this feature, use the <code>config switch ip-source-guard</code> command to configure it.	disable
learning-limit <0 - 128>	<p>Limit the number of dynamic MAC addresses on this port.</p> <p>The value range is 0 and 128. Setting the <code>learning-limit</code> to 0 means that there is no limit to the number of MAC addresses learned.</p> <p><b>NOTE:</b> You cannot set the learning-limit on the internal interface.</p>	0

Variable	Description	Default
learning-limit-action {none   shutdown}	When the <code>learning-limit</code> is exceeded, select <code>none</code> to take no action or select <code>shutdown</code> to disable this interface. The <code>learning-limit-action</code> applies only to physical switch port interfaces, not to trunks or VLANs.  The <code>learning-limit-action</code> is available only when <code>learning-limit</code> has been set to 1-128.	none
log-mac-event {enable   disable}	Enable or disable the logging of dynamic MAC address events.	disable
loop-guard {enabled   disabled}	Enable or disable loop guard for this interface.	disabled
loop-guard-timeout <0-120>	After enabling loop guard, set the number of minutes before loop guard resets. Setting this value to 0 means that there is no timeout.	45
loop-guard-mac-move-threshold <0-100>	After enabling loop guard, set the number of MAC address moves per second for this interface. The threshold must be exceeded for 6 consecutive seconds to trigger loop guard.	0
nac {enable   disable}	This command is available only in FortiLink mode. Enable to allow the switch to transmit MAC events to the FortiGate device to improve network access control (NAC) performance.	disable
native-vlan <vlan_int>	Enter the native (untagged) VLAN for this interface.	1
packet-sampler {enabled   disabled}	Enable or disable packet sampling for flow export.	disabled
sample-direction {both   rx   tx}	Set the sFlow sample direction to monitor received traffic (rx), monitor transmitted traffic (tx), or monitor both.  This option is only available when the packet-sampler is enabled.	both
packet-sample-rate <0-99999>	If packet-sampler is set to enabled, you can change the packet sample rate.	512
private-vlan {disabled   promiscuous   sub-vlan}	Enable private VLAN functionality. <b>NOTE:</b> Private VLANs are not supported on the FortiSwitch-28C.	disabled
ptp-policy {<string>   default}	Enter the name of the Precision Time Protocol (PTP) policy.	default
qos-policy {<string>   default}	Enter the name of the QoS egress CoS queue policy.	default
rpvst-port {enabled   disabled}	Enable or disable whether this interface interoperates with per-VLAN spanning tree (PVST).	disabled
security-groups <security-group-name>	Enter the security group name if you are using port-based authentication or MAC-based authentication.	No default

Variable	Description	Default
sflow-counter-interval <0-255>	Set the polling interval for the sFlow sampler counter. Set to 0 to disable polling.	0
snmp-index <integer>	Enter the SNMP index for this interface.	Default is the port number
sticky-mac {disable   enable}	Enable or disable whether dynamically learned MAC addresses are persistent when the status of a FortiSwitch port changes (goes down or up).	disable
stp-bpdu-guard {disabled   enabled}	Enable or disable STP BPDU guard protection. To use STP BPDU guard on this interface, you must enable stp-state and edge-port.	disabled
stp-loop-protection {enabled   disabled}	Enable or disable STP loop protection on this interface.	disabled
stp-root-guard {disabled   enabled}	Enable or disable STP root guard protection. To use STP root guard, you must enable stp-state.	disabled
stp-state {enabled   disabled}	Enable or disable Spanning Tree Protocol (STP) on this interface.	enabled
trust-dot1p-map	Whether to trust the dot1p CoS value in the incoming packets. Specify a map to map the CoS value to an egress queue value.	No default
trust-ip-dscp-map	Whether to trust the DSCP QoS value in the incoming packets. Specify a map to map the DSCP value to an egress queue value.	No default
untagged-vlans	Select the allowed-vlans to be transmitted without VLAN tags	No default
vlan-mapping-miss-drop {enable   disable}	Enable or disable whether a packet is dropped if the VLAN ID in the packet's tag is not defined in the vlan-mapping configuration.	disable
vlan-tpid <default   string>	Select which VLAN TPID profile to use. The default VLAN TPID profile has a value of 0x8100 and cannot be deleted or changed. <b>NOTE:</b> If you are not using the default VLAN TPID profile, you must have already defined the VLAN TPID profile with the <code>config switch vlan-tpid</code> command.	default
<b>config port-security</b>		
allow-mac-move {enable   disable}	Enable on the destination port when an 802.1x client is being moved between ports that are not directly connected to the FortiSwitch unit.	disable
eap-egress-tagged {enable   disable}	When <code>allow-mac-move</code> is enabled, you can enable this option to ensure that egress EAPOL packets are tagged without needing additional checking.	enable
port-security-mode {none   802.1X   802.1X-mac-based   macsec}	Set the security mode for the port. <ul style="list-style-type: none"> <li><code>802.1X</code>—Use this setting for port-based authentication.</li> <li><code>802.1Xmac-based</code>—Use this setting for MAC-based authentication.</li> <li><code>macsec</code>—Use this setting for MACsec.</li> </ul>	none

Variable	Description	Default
	If you change the security mode from <code>none</code> , you must set the security group with the <code>set security-groups</code> command.	
<code>auth-fail-vlan {enable   disable}</code>	When enabled, the system assigns the <code>auth-fail-vlanid</code> to users who attempted to authenticate but failed to provide valid credentials.	disable
<code>auth-fail-vlanid &lt;VLAN_id&gt;</code>	Enter the VLAN identifier that the system assigns to users who attempted to authenticate but failed to provide valid credentials. This field is mandatory when <code>auth-fail-vlan</code> is enabled.	200
<code>authserver-timeout-period &lt;3-15&gt;</code>	Enter the number of seconds before the authentication server stops trying to authenticate users.	3
<code>authserver-timeout-vlan {enable   disable}</code>	Enable or disable whether users are assigned to the specified VLAN when the authentication server times out.	disable
<code>authserver-timeout-vlanid &lt;1-4094&gt;</code>	Enter the VLAN identifier that the system assigns to users when the authentication server times out. This field is mandatory when <code>authserver-timeout-vlan</code> is enabled.	300
<code>dacl {enable   disable}</code>	Enable or disable the dynamic access control list (DACL) on this interface.	disable
<code>eap-auto-untagged-vlans {enable   disable}</code>	Enable to allow voice traffic with voice VLAN tag at egress.	enable
<code>eap-passthru {disable   enable}</code>	Enable or disable the EAP pass-through mode.	enable
<code>framevid-apply {disable   enable}</code>	Enable or disable the capability to apply the EAP/MAB frame VLAN to the port native VLAN. <b>NOTE:</b> For phone and PC configuration only, disable <code>framevid-apply</code> to preserve the native VLAN when the data traffic is expected to be untagged.	enable
<code>guest-auth-delay &lt;integer&gt;</code>	If a device does not attempt to authenticate within this timeframe (in seconds), the guest VLAN is assigned.	5
<code>guest-vlan {enable   disable}</code>	When enabled, the system assigns the <code>guest-vlanid</code> to unauthorized users.	disable
<code>guest-vlanid &lt;VLAN_id&gt;</code>	VLAN identifier. Mandatory field when guest VLAN is enabled.	100
<code>mab-eapol-request &lt;0-10&gt;</code>	Set how many EAP packets are sent to trigger EAP authentication for "silent supplicants" (such as end devices running Windows 7) that send non-EAP packets when they wake up from sleep mode. To disable this feature, set <code>mab-eapol-request</code> to 0 or disable <code>mac-auth-bypass</code> .	3
<code>mac-auth-bypass {enable   disable}</code>	Enable or disable MAC auth bypass.	disable

Variable	Description	Default
macsec-profile <MACsec_profile_name>	If you set the <code>port-security-mode</code> to <code>macsec</code> , specify which MACsec profile to use. Use the <code>config switch macsec profile</code> command to create a MACsec profile.	No default
open-auth {enable   disable}	Enable or disable open authentication (monitor mode) on this interface.	disable
quarantine-vlan {enable   disable}	Enable or disable quarantine VLAN detection. Enable this setting to use quarantines with 802.1x MAC-based authentication in FortiLink mode.	enable
radius-timeout-overwrite {enable   disable}	Enable this option to use the value of the session-timeout attribute. The session-timeout attribute specifies how many seconds of idleness are allowed before the FortiSwitch unit disconnects a session. The value must be more than 60 seconds.	disable
<b>config raguard</b>		
<ID>	Enter an identifier for the IPv6 RA-guard configuration.	No default
raguard-policy <name_of_RA_guard_policy>	Enter the name of the RA-guard policy to use for this interface. The RA-guard policy must be created (with the <code>config switch raguard-policy</code> command) before it is applied to an interface.	No default
vlan-list <list_of_VLANs>	Enter a VLAN or a range of VLANs to apply this policy to. Use less than 4,096 characters for the vlan-list value. Separate the VLANs and VLAN ranges with commas, for example: 1,3-4,6,7,9-100	All allowed VLANs on this port
<b>config qnq</b>		
status {enable   disable}	Enable or disable VLAN stacking (QnQ) mode.	disable
add-inner <1-4095>	If the QnQ mode is enabled, add the inner tag for untagged packets upon ingress.	No default
edge-type customer	If the QnQ mode is enabled, the edge type is set to customer.	customer
priority {follow-c-tag   follow-s-tag}	If the QnQ mode is enabled, select whether to follow the priority of the S-tag (service tag) or C-tag (customer tag). <b>NOTE:</b> This command is not available on the 224D-FPOE, 248D, 424D, 424D-POE, 424D-FPOE, 448D, 448D-POE, 448D-FPOE, 224E, 224E-POE, 248E-POE and 248E-FPOE models.	follow-s-tag
remove-inner {enable   disable}	If the QnQ mode is enabled, enable or disable whether the inner tag is removed upon egress.	disable
s-tag-priority <0-7>	If packets follow the priority of the S-tag (service tag), enter the priority value. This option is available only when the priority is set to <code>follow-s-tag</code> . <b>NOTE:</b> This command is not available on the 224D-FPOE, 248D, 424D, 424D-POE, 424D-FPOE, 448D, 448D-POE, 448D-FPOE, 224E, 224E-POE, 248E-POE and 248E-FPOE models.	0

Variable	Description	Default
vlan-mapping-miss-drop {enable   disable}	If the QnQ mode is enabled, enable or disable whether a packet is dropped if the VLAN ID in the packet's tag is not defined in the vlan-mapping configuration.	disable
<b>config vlan-mapping (options available when QnQ is enabled)</b>		
<id>	Enter a mapping entry identifier.	No default
description <string>	Enter a description of the mapping entry.	No default
match-c-vlan <1-4094>	Enter a matching customer (inner) VLAN.	0
new-s-vlan <1-4094>	Enter a new service (outer) VLAN. <b>NOTE:</b> The VLAN must be in the port's allowed VLAN list. This option is only available after you set the value for <code>match-c-vlan</code> .	No default
<b>config vlan-mapping (options available when QnQ is disabled)</b>		
<id>	Enter an identifier for the VLAN mapping entry.	No default
description <string>	Enter a description of the VLAN mapping entry.	No default
direction {egress   ingress}	Select the ingress or egress direction.	No default
match-s-vlan <1-4094>	If the direction is set to egress, enter the service (outer) VLAN to match.	0
match-c-vlan <1-4094>	If the direction is set to ingress, enter the customer (inner) VLAN to match.	0
action {add   delete   replace}	Select what happens when the packet is matched: <ul style="list-style-type: none"> <li><code>add</code>—When the packet is matched, add the service VLAN. You cannot set the <code>action</code> to <code>add</code> for the egress direction.</li> <li><code>delete</code>—When the packet is matched, delete the service VLAN. You cannot set the <code>action</code> to <code>delete</code> for the ingress direction.</li> <li><code>replace</code>—When the packet is matched, replace the customer VLAN or service VLAN.</li> </ul> This option is only available after you set a value for <code>match-c-vlan</code> or <code>match-s-vlan</code> .	No default
new-s-vlan <1-4094>	Set the new service (outer) VLAN. This option is only available after you set the <code>action</code> to <code>add</code> or <code>replace</code> for the ingress direction or after you set the <code>action</code> to <code>replace</code> for the egress direction.	No default

## Example

The following example shows QoS configuration on a trunk interface:

```
config switch interface
edit "tr1"
set snmp-index 56
set trust-dot1p-map "dot1p_map1"
```



```
        set default-cos 1
        set qos-policy "p1"
    next
end
```

The following example shows how to configure 802.1x authentication:

```
config switch interface
    edit "port11"
        set native-vlan 200
        set snmp-index 11
        config port-security
            set port-security-mode 802.1X
            set auth-fail-vlan enable
            set auth-fail-vlanid 301
            set authserver-timeout-period 4
            set authserver-timeout-vlan enable
            set authserver-timeout-vlanid 300
            set eap-auto-untagged-vlans enable
            set eap-passthru enable
            set framevid-apply enable
            set guest-auth-delay 5
            set guest-vlan enable
            set guest-vlanid 401
            set mab-eapol-request 0
            set mac-auth-bypass disable
            set open-auth disable
            set quarantine-vlan enable
            set radius-timeout-overwrite enable
        end
        set security-groups "radius1grp"
    next
end
```

## config switch ip-mac-binding

Use IP-MAC binding to prevent ARP spoofing.

The port accepts a packet only if the source IP address and source MAC address in the packet match an entry in the IP-MAC binding table.

You can enable or disable IP-MAC binding for the whole switch, and you can override this global setting for each port.

### Syntax

```
config switch ip-mac-binding
    edit <sequence_int>
        set ip <xxx.xxx.xxx.xxx> <xxx.xxx.xxx.xxx>
        set mac <xx:xx:xx:xx:xx:xx>
        set status {enable | disable}
    next
end
```

Variable	Description	Default
<sequence_int>	Enter a sequence number for the IP-MAC binding entry.	No default
ip <xxx.xxx.xxx.xxx> <xxx.xxx.xxx.xxx>	Enter the source IP address and network mask for this rule.	0.0.0.0 0.0.0.0
mac <xx:xx:xx:xx:xx:xx>	Enter the MAC address for this rule.	00:00:00:00:00:00
status {enable   disable}	Enable or disable the IP-MAC binding.	disable

## Example

The following example configures the IP-MAC binding for the FortiSwitch unit:

```
config switch ip-mac-binding
  edit 1
    set ip 172.168.20.1 255.255.255.255
    set mac 00:21:cc:d2:76:72
    set status enable
  next
end
```

## config switch ip-source-guard

Use this command to configure IP source guard for a port by binding IPv4 addresses to MAC addresses.

### Syntax

```
config switch ip-source-guard
  edit <port_name>
    config binding-entry
      edit <id>
        set ip <xxx.xxx.xxx.xxx>
        set mac <XX:XX:XX:XX:XX:XX>
      next
    end
  next
end
```

Variable	Description	Default
<port_name>	Enter the name of the port.	No default
<id>	Enter a unique integer to create a new entry.	No default
ip <xxx.xxx.xxx.xxx>	Required. Enter the IPv4 address to bind to the MAC address. Masks are not supported.	0.0.0.0
mac <XX:XX:XX:XX:XX:XX>	Required. Enter the MAC address to bind to the IPv4 address.	00:00:00:00:00:00

## Example

The following example binds an IPv4 address to a MAC address so that traffic from that IP address will be allowed on port4:

```
config switch ip-source-guard
  edit port4
    config binding-entry
      edit 1
        set ip 172.168.20
        set mac 00:21:cc:d2:76:72
      next
    end
  next
end
```

## config switch lldp profile

Use this command to configure LLDP profile settings. The LLDP profile contains most of the port-specific configuration. Profiles are designed to provide a central point of configuration for LLDP settings that are likely to be the same for multiple ports.

There are two static LLDP profiles: `default` and `default-auto-isl`. These profiles are created automatically. They can be modified but cannot be deleted. The `default-auto-isl` profile always has auto-isl enabled, and rejects any configurations which attempt to disable it.

## Syntax

```
config switch lldp profile
  edit <profile>
    set 802.1-tlvs port-vlan-id
    set 802.3-tlvs {eee-config | max-frame-size | power-negotiation}
    set auto-isl {enable | disable}
    set auto-isl-hello-timer <1-30>
    set auto-isl-port-group <0-9>
    set auto-isl-receive-timeout <3-90>
    set auto-mclag-icl {enable | disable}
    set med-tlvs (inventory-management | location-identification | network-policy | power-
      management)
    config custom-tlvs
      edit <TLVname_str>
        set information-string <hex-bytes>
        set oui <hex-bytes>
        set subtype <integer>
      next
    config med-location-service
      edit address-civic
        set status {enable | disable}
        set sys-location-id <string>
      next
      edit coordinates
        set status {enable | disable}
        set sys-location-id <string>
      next
      edit elin-number
```

```

        set status {enable | disable}
        set sys-location-id <string>
    next
config med-network-policy
    edit {guest-voice | guest-voice-signaling | softphone-voice |
        streaming-video | video-conferencing | video-signaling |
        voice | voice-signaling}
        set status {enable | disable}
        set assign-vlan {enable | disable}
        set dscp <0 - 63>
        set priority <0 - 7>
        set vlan <0 - 4094>
    next
end

```

Variable	Description	Default
profile	Enter a name for the LLDP profile.	No default
802.1-tlvs	The only 802.1 TLV that can be enabled or disabled is <code>port-vlan-id</code> . This TLV will send the native VLAN of the port. If the value is changed, the sent value will reflect the updated value.	no TLV enabled
802.3-tlvs {eee-config   max-frame-size   power-negotiation}	Set which 802.3 TLVs are enabled: <ul style="list-style-type: none"> <li><code>eee-config</code>—Use this TLV to send the energy-efficient Ethernet (EEE) status of the port.</li> <li><code>max-frame-size</code>—This TLV will send the maximum frame size value of the port. If the value is changed, the sent value reflects the updated value.</li> <li><code>power-negotiation</code>—Use this TLV to send the power over Ethernet (PoE) classification of the port.</li> </ul>	no TLV enabled
auto-isl	Enable or disable the auto ISL capability.	Disabled
auto-isl-hello-timer <1-30>	Enter a value (in seconds) for the hello timer. The range is 1 to 30.	3
auto-isl-port-group <0-9>	Enter a value for the port group. The range is 0 to 9.	0
auto-isl-receive-timeout	Enter a value (in seconds) for the receive timeout. The range is 3 to 90.	9
auto-mclag-icl {enable   disable}	Enable or disable the MCLAG inter-chassis link.	disable
med-tlvs (inventory-management   location-identification   network-policy   power-management)	Enable the inventory-management TLVs, location-identification TLVs, network-policy TLVs, and/or power-management TLVs.	inventory-management network-policy location-identification
<b>config custom-tlvs</b>		
<TLVname_str>	Enter the TLV name.	No default

Variable	Description	Default
information-string	Organizationally defined information string. Enter up to 507 bytes in hexadecimal notation.	No default
oui	Organizationally unique identifier. Enter 3 hexadecimal bytes (000000 - FFFFFFFF). At least one byte must have a non-zero value.	000000
subtype	Organizationally defined subtype. Enter an integer in the range of 0 to 255.	0
<b>config med-location-service</b>		
address-civic	Civic address and postal information.	No default
status {enable   disable}	Enable the status to transmit the type-length-value (TLV) if the LLDP-MED profile has been enabled on a port.	disable
sys-location-id <string>	Use the specified location entry that was already entered with the <code>config system location</code> command.	No default
coordinates	Coordinates of the location.	No default
status {enable   disable}	Enable the status to transmit the type-length-value (TLV) if the LLDP-MED profile has been enabled on a port.	disable
sys-location-id <string>	Use the specified location entry that was already entered with the <code>config system location</code> command.	No default
elin-number	Emergency location identifier number (ELIN).	No default
status {enable   disable}	Enable the status to transmit the type-length-value (TLV) if the LLDP-MED profile has been enabled on a port.	disable
sys-location-id <string>	Use the specified location entry that was already entered with the <code>config system location</code> command.	No default
<b>config med-network-policy</b>		
{guest-voice   guest-voice-signaling   softphone-voice   streaming-video   video-conferencing   video-signaling   voice   voice-signaling}	Enter one of the policy type names.	No default
status {enable   disable}	Enable or disable the policy for the policy type.	disable
assign-vlan {enable   disable}	Enable or disable whether the VLAN is added as one of the allowed-vlans for this port.	disable
dscp <0-63>	DSCP value to send.	0
priority <0-7>	CoS priority value to send.	0
vlan <0-4094>	VLAN value to send.	0

Variable	Description	Default
	Setting this option to 0 will advertise the network policy as priority tagged, rather than VLAN tagged. Priority tagged network policies are always transmitted, whereas VLAN tagged are only transmitted if the VLAN is present on the switch interface sending the LLDP packet.	

**NOTE:** LLDP-MED network policies cannot be deleted or added. To use a policy, the `med-tlvs` field must include `network-policy`, and you must set the policy to `enabled`. The VLAN values on the policy are cross-checked against the VLAN native, allowed, and untagged attributes for any interfaces that contain physical-ports using this profile. The cross-check determines if the policy TLV should be sent (VLAN must be native or allowed), and if the TLV should mark the VLAN as tagged or untagged (VLAN is native, or is in untagged). The network policy TLV is automatically updated when a switch interface changes VLAN configuration, or if a physical port is added to, or removed from, a trunk.

## Example

The following example configures an LLDP-MED profile:

```
config switch lldp profile
  edit "Forti670i"
    config med-network-policy
      edit "voice"
        set dscp 46
        set priority 5
        set status enable
        set vlan 400
      next
      edit "guest-voice"
      next
      edit "guest-voice-signaling"
      next
      edit "softphone-voice"
      next
      edit "video-conferencing"
      next
      edit "streaming-video"
        set dscp 40
        set priority 3
        set status enable
        set vlan 400
      next
      edit "video-signaling"
      next
    end
    set med-tlvs inventory-management network-policy
  next
end
```

## config switch lldp settings

Configure the global LLDP settings.

## Syntax

```
config switch lldp settings
    set status {enable| disable}
    set tx-hold <1-16>
    set tx-interval <5-4095>
    set fast-start-interval <0 or 2-5>
    set management-interface (internal | <string>)
    set device-detection {enable | disable}
end
```

Variable	Description	Default
status	Enable or disable	Enabled
tx-hold	Number of tx-intervals before the local LLDP data expires. Therefore, the packet TTL (in seconds) is <b>tx-hold</b> times <b>tx-interval</b> . The range for tx-hold is 1 to 16.	4
tx-interval	How often the FortiSwitch transmits the LLDP PDU. The range is 5 to 4095 seconds.	30
fast-start-interval	How often the FortiSwitch transmits the first 4 LLDP packets when a link comes up. The range is 2 to 5 seconds. Set this variable to zero to disable fast start.	2
management-interface	Primary management interface to be advertised in LLDP and CDP PDUs.	<b>mgmt</b> or <b>internal</b> , depending on FortiSwitch model.
device-detection {enable   disable}	Enable or disable whether LLDP neighbor devices are dynamically detected. This option is available only in FortiLink mode.	disable

## Example

The following example configures the global LLDP settings:

```
config switch lldp settings
    set status enable
    set tx-hold 8
    set tx-interval 2000
    set fast-start-interval 3
    set management-interface internal
end
```

## config switch macsec profile

Use these commands to configure a Media Access Control security (MACsec) profile.

## Syntax

```
config switch macsec profile
```

```

edit <profile_name>
  set cipher_suite GCM_AES_128
  set confident-offset {0 | 30 | 50}
  set encrypt-traffic {enable | disable}
  set include-macsec-sci {enable | disable}
  set include-mka-icv-ind enable
  set macsec-mode static-cak
  set macsec-validate strict
  set mka-priority <0-255>
  set replay-protect {enable | disable}
  set replay-window <0-16777215>
  set status {enable | disable}
  config mka-psk
    edit <pre-shared key name>
      set crypto-alg AES_128_CMAC
      set mka-cak <string>
      set mka-ckn <string>
      set status active
    next
  end
  config traffic-policy
    edit <traffic_policy_name>
      set security-policy must-secure
      set status enable
    next
  end
next
end

```

Variable	Description	Default
<profile_name>	Enter a name for the MACsec profile.	No default
cipher_suite GCM_AES_128	Only the GCM-AES-128 cipher suite is available currently for encryption.	GCM_AES_128
confident-offset {0   30   50}	Select the number of bytes for the MACsec traffic confidentiality offset. Selecting 0 means that all of the MACsec traffic is encrypted. Selecting 30 or 50 bytes means that the first 30 or 50 bytes of MACsec traffic are not encrypted.	0
encrypt-traffic {enable   disable}	Enable or disable whether MACsec traffic is encrypted.	enable
include-macsec-sci {enable   disable}	Enable or disable whether to include the MACsec transmit secure channel identifier (SCI).	enable
include-mka-icv-ind enable	The MACsec Key Agreement (MKA) integrity check value (ICV) indicator is always included.	enable
macsec-mode static-cak	The MACsec mode is always static connectivity association key (CAK).	static-cak
macsec-validate strict	The MACsec validation is always strict.	strict
mka-priority <0-255>	Enter the MACsec MKA priority.	255
replay-protect {enable   disable}	Enable or disable MACsec replay protection. MACsec replay	disable



Variable	Description	Default
	protection drops packets that arrive out of sequence, depending on the <code>replay-window</code> value.	
<code>replay-window &lt;0-16777215&gt;</code>	Enter the number of packets for the MACsec replay window size. If two packets arrive with the difference between their packet identifiers more than the replay window size, the most recent packet of the two is dropped. The range is 0-16777215 packets. Enter 0 to ensure that all packets arrive in order without any repeats.	32
<code>status {enable   disable}</code>	Enable or disable this MACsec profile.	enable
<b>config mka-psk</b>		
<code>&lt;pre-shared key name&gt;</code>	Enter a name for this MACsec MKA pre-shared key configuration.	No default
<code>crypto-alg AES_128_CMAC</code>	Only the AES_128_CMAC algorithm is available for encrypting the pre-shared key.	AES_128_CMAC
<code>mka-cak &lt;string&gt;</code>	Enter the string of hexadecimal digits for the connectivity association key (CAK). The string can be up to 32-bytes long.	No default
<code>mka-ckn &lt;string&gt;</code>	Enter the string of hexadecimal digits for the connectivity association name (CKN). The string can be 1-byte to 64-bytes long.	No default
<code>status active</code>	The status of the pre-shared key pair is always active.	active
<b>config traffic-policy</b>		
<code>&lt;traffic_policy_name&gt;</code>	Enter a name for this MACsec traffic policy.	No default
<code>security-policy must-secure</code>	The policy must secure traffic for MACsec.	must-secure
<code>status enable</code>	The status of this MACsec traffic policy is always enabled.	enable

## Example

This example configures a MACsec profile.

```
config switch macsec profile
  edit "2"
    set cipher_suite GCM_AES_128
    set confident-offset 0
    set encrypt-traffic enable
    set include-macsec-sci enable
    set include-mka-icv-ind enable
    set macsec-mode static-cak
    set macsec-validate strict
    set mka-priority 199
  config mka-psk
    edit "2"
      set crypto-alg AES_128_CMAC
      set mka-cak "0123456789ABCDEF0123456789ABCDEE"
      set mka-ckn "6162636465666768696A6B6C6D6E6F707172737475767778797A303132333436"
```

```

        set status active
    next
end
set replay-protect disable
set replay-window 32
set status enable
config traffic-policy
    edit "2"
        set security-policy must-secure
        set status enable
    next
end
next
end

```

## config switch mirror

Use these commands to configure the packet mirror. Packet mirroring allows you to collect packets on specified ports and then send them to another port to be collected and analyzed.

### Syntax

```

config switch mirror
    edit <mirror session name>
        set dst <interface>
        set encap-gre-protocol <hexadecimal_integer>
        set encap-ipv4-src <IPv4_address>
        set encap-ipv4-tos <hexadecimal_integer>
        set encap-ipv4-ttl <0-255>
        set encap-mac-dst <MAC_address>
        set encap-mac-src <MAC_address>
        set encap-vlan {tagged | untagged}
        set encap-vlan-cfi <0-1>
        set encap-vlan-id <1-4094>
        set encap-vlan-priority <0-7>
        set encap-vlan-tpid <0x0001-0xfffe>
        set erspan-collector-ip <IPv4_address>
        set mode {ERSPAN-auto | ERSPAN-manual | RSPAN | SPAN}
        set rspan-ip <IPv4_address>
        set src-egress <interface_name>
        set src-ingress <interface_name>
        set status {active | inactive}
        set strip-mirrored-traffic-tags {disable | enable}
        set switching-packet {enable | disable}
    end
end

```

Variable	Description	Default
<mirror session name>	Enter the name of the mirror session to edit (or enter a new mirror session name).	No default
dst <interface>	Required when the mode is set to ERSPAN-manual, RSPAN (when the switch is not in FortiLink mode), or SPAN.	No default

Variable	Description	Default
	<p>On FortiSwitch models that support RSPAN and ERSPAN, set the trunk or physical port that will act as a mirror. The physical port cannot be part of a trunk.</p> <p>On FortiSwitch models that do <i>not</i> support RSPAN and ERSPAN, set the physical port that will act as a mirror. The physical port can be part of a trunk.</p>	
encap-gre-protocol <hexadecimal_integer>	<p>Set the protocol value in the ERSPAN GRE header.</p> <p>This option is available when the mode is ERSPAN-auto or ERSPAN-manual.</p>	0x88be
encap-ipv4-src <IPv4_address>	<p>Required when the mode is set to ERSPAN-manual and the status is active.</p> <p>Set the IPv4 source address in the ERSPAN IP header. The range is 0.0.0.1-255.255.255.254.</p> <p>This option is available when the mode is ERSPAN-manual.</p>	0.0.0.0
encap-ipv4-tos <hexadecimal_integer>	<p>Set the type of service (ToS) value or enter the DSCP and ECN values in the ERSPAN IP header.</p> <p>This option is available when the mode is ERSPAN-auto or ERSPAN-manual.</p>	0x00
encap-ipv4-ttl <0-255>	<p>Set the IPv4 time-to-live (TTL) value in the ERSPAN IP header.</p> <p>This option is available when the mode is ERSPAN-auto or ERSPAN-manual.</p>	16
encap-mac-dst <MAC_address>	<p>Required when the mode is set to ERSPAN-manual and the status is active.</p> <p>Set the MAC address of the next-hop or gateway on the path to the ERSPAN collector IP address. The range is 00:00:00:00:00:01-FF:FF:FF:FF:FF:FF.</p> <p>This option is available only when the mode is ERSPAN-manual.</p>	00:00:00:00:00:00
encap-mac-src <MAC_address>	<p>Required when the mode is set to ERSPAN-manual and the status is active.</p> <p>Set the source MAC address in the ERSPAN Ethernet header. The range is 00:00:00:00:00:01-FF:FF:FF:FF:FF:FE.</p> <p>This option is available when the mode is ERSPAN-manual.</p>	00:00:00:00:00:00
encap-vlan {tagged   untagged}	<p>Set the status of ERSPAN encapsulation headers to tagged or untagged to control whether the VLAN header is added to the encapsulated traffic.</p> <p>This option is available if the mode is ERSPAN-manual.</p>	untagged

Variable	Description	Default
encap-vlan-cfi <0-1>	<p>Set the canonical format identifier (CFI) or drop eligible indicator (DEI) bit in the ERSPAN or RSPAN VLAN header.</p> <p>This option is available when the mode is RSPAN or ERSPAN-auto. This option is available for the ERSPAN-manual mode if <code>encap-vlan</code> is set to <code>tagged</code>.</p> <p>When the mode is RSPAN, this option is not available on the 248D, 248D-POE, 248D-FPOE, 248E, 248E-POE, 248E-FPOE, 448D, 448D-POE, and 448D-FPOE models.</p>	0
encap-vlan-id <1-4094>	<p>Set the VLAN identifier in the ERSPAN or RSPAN VLAN header.</p> <p>This option is available when the mode is RSPAN. This option is available for the ERSPAN-manual mode if <code>encap-vlan</code> is set to <code>tagged</code>.</p>	1
encap-vlan-priority <0-7>	<p>Set the class of service (CoS) bits in the ERSPAN or RSPAN VLAN header.</p> <p>This option is available when the mode is RSPAN or ERSPAN-auto. This option is available for the ERSPAN-manual mode if <code>encap-vlan</code> is set to <code>tagged</code>.</p> <p>When the mode is RSPAN, this option is not available on the 248D, 248D-POE, 248D-FPOE, 248E, 248E-POE, 248E-FPOE, 448D, 448D-POE, and 448D-FPOE models.</p>	0
encap-vlan-tpid <0x0001-0xffff>	<p>Set the tag protocol identifier (TPID) for the encapsulating VLAN header. The default value, 0x8100, is for an IEEE 802.1Q-tagged frame.</p> <p>This option is available when the mode is RSPAN or ERSPAN-auto. This option is available for the ERSPAN-manual mode if <code>encap-vlan</code> is set to <code>tagged</code>.</p>	0x8100
erspan-collector-ip <IPv4_address>	<p>Required when the status is active and the mode is set to ERSPAN-auto or ERSPAN-manual.</p> <p>Set the IPv4 address for the ERSPAN collector. The range is 0.0.0.1-255.255.255.255.</p> <p>This option is available only when the mode is ERSPAN-auto or ERSPAN-manual.</p>	0.0.0.0
mode {ERSPAN-auto   ERSPAN-manual   RSPAN   SPAN}	<p>Select the mirroring mode:</p> <ul style="list-style-type: none"> <li><code>ERSPAN-auto</code>—Mirror traffic to the specified destination interface using ERSPAN encapsulation. The header contents are automatically configured.</li> <li><code>ERSPAN-manual</code>—Mirror traffic to the specified destination interface using ERSPAN encapsulation. The header contents are manually configured.</li> </ul>	SPAN

Variable	Description	Default
	<ul style="list-style-type: none"> <li><b>RSPAN</b>—Mirror traffic to the specified destination interface using RSPAN encapsulation.</li> <li><b>SPAN</b>—Mirror traffic to the specified destination interface without encapsulation.</li> </ul> <p>SPAN is supported on all FortiSwitch models. RSPAN and ERSPAN are supported on 124D, 224D-FPOE, 248D, 424D, 424D-POE, 424D-FPOE, 448D, 448D-POE, 448D-FPOE, 224E, 224E-POE, 248E-POE, 248E-FPOE, 524D, 524D-FPOE, 548D, 548D-FPOE, 1024D, 1048D, 1048E, 3032D, and 3032E.</p>	
<code>rspan-ip &lt;IPv4_address&gt;</code>	<p>Required when the mode is RSPAN, the status is active, and the switch is in FortiLink mode.</p> <p>Enter the destination IP address for the RSPAN collector. The range is 0.0.0.1-255.255.255.255.</p> <p>This option is available only when the mode is RSPAN and the switch is in FortiLink mode.</p>	0.0.0.0
<code>src-egress &lt;interface_name&gt;</code>	Optional. Set the source egress physical ports that will be mirrored. Only one active egress mirror session is allowed.	No default
<code>src-ingress &lt;interface_name&gt;</code>	Optional. Specify the source ingress physical ports that will be mirrored.	No default
<code>status {active   inactive}</code>	Set the mirror session to active or inactive.	inactive
<code>strip-mirrored-traffic-tags {disable   enable}</code>	<p>Enable or disable the removal of VLAN tags from mirrored traffic.</p> <p>This option is available if the mode is ERSPAN-auto or ERSPAN-manual.</p>	disable
<code>switching-packet {enable   disable}</code>	Enable or disable the switching functionality on the dst interface when mirroring.	disable

## Example

The following example configures a port mirror:

```
config switch mirror
  edit "m1"
    set mode SPAN
    set dst "port5"
    set src-egress "port2" "port3"
    set src-ingress "port2" "port4"
    set status active
    set switching-packet enable
  end
```

## config switch mld-snooping globals

Use this command to configure global settings for Multicast Listener Discovery (MLD) snooping on the FortiSwitch unit.

### Syntax

```
config switch mld-snooping globals
    set aging-time <integer>
    set leave-response-timeout <integer>
    set query-interval <10-1200>
end
```

Variable	Description	Default
aging-time <integer>	The maximum number of seconds to retain a multicast snooping entry for which no packets have been seen (15-3600).	300
leave-response-timeout <integer>	Enter the maximum number of seconds that the switch waits after sending a group-specific query in response to the leave message. The range of values is 1-20.	10
query-interval <10-1200>	Enter the maximum number of seconds between MLD queries.	125

### Example

The following example configures the global settings for MLD snooping on the FortiSwitch unit:

```
config switch mld-snooping globals
    set aging-time 150
    set leave-response-timeout 15
    set query-interval 200
end
```

## config switch mrp profile

Use this command to configure a Media Redundancy Protocol (MRP) profile.

### Syntax

```
config switch mrp profile
    edit <MRP_profile_name>
        set default-test-interval <30-50 ms>
        set short-test-interval <10-30 ms>
        set test-monitoring-count <1-5>
        set topology-change-interval <10-20 ms>
        set topology-change-repeat-count <1-5>
    next
end
```

Variable	Description	Default
<MRP_profile_name>	Enter a name for the MRP profile.	No default

Variable	Description	Default
default-test-interval <30-50 ms>	Enter the default number of milliseconds between sending MRP_Test frames.	50
short-test-interval <10-30 ms>	Enter the number of milliseconds before sending MRP_Test frames after link changes in the ring.	30
test-monitoring-count <1-5>	Enter the number of MRP_Test frames received that are monitored.	5
topology-change-interval <10-20 ms>	Enter the number of milliseconds between sending MRP_TopologyChange frames.	20
topology-change-repeat-count <1-5>	Enter the number of repeated MRP_TopologyChange frames that are transmitted.	3

## config switch mrp settings

Use this command to configure the Media Redundancy Protocol (MRP) settings.

### Syntax

```
config switch mrp settings
    set status {disable | enable}
    set role {automanager | client}
    set domain-id <32_hexadecimal_digits>
    set domain-name <domain_name>
    set vlan-id <1-4094>
    set priority <0-65535>
    set ring-port1 <port_name>
    set ring-port2 <port_name>
    set profile-name {500ms | <custom_profile_name>}
end
```

Variable	Description	Default
status {disable   enable}	Enable or disable MRP.	disable
role {automanager   client}	Select whether the switch acts as an MRP client or an MRP automanager.	client
domain-id <32_hexadecimal_digits>	Enter a universally unique identifier to represent the MRP ring.	FFFFFFFF-FFFF-FFFF-FFFFFFFF
domain-name <domain_name>	Enter a unique logical name for the MRP domain identifier.	domain1
vlan-id <1-4094>	Optional. Enter the VLAN identifier for sending MRP frames. If you set this option to a different value than 1, the VLAN must be created before it is assigned to the MRP ring.	1

Variable	Description	Default
priority <0-65535>	Enter the priority of the MRP manager. The highest priority is 0, and the lowest priority is 65535.	40960
ring-port1 <port_name>	The physical port that serves as the first ring port.	No default
ring-port2 <port_name>	The physical port that serves as the second ring port.	No default
profile-name {500ms   <custom_profile_name>}	A unique MRP profile name.	500ms

## config switch network-monitor directed

Use this command to configure a static entry for network monitoring on the FortiSwitch unit.

### Syntax

```
config switch network-monitor directed
  edit <unused network monitor>
    set monitor-mac <xx:xx:xx:xx:xx:xx>
  end
```

Variable	Description	Default
<unused network monitor>	Enter the number of an unused network monitor.	No default
monitor-mac <xx:xx:xx:xx:xx:xx>	Enter the MAC address to be monitored.	00:00:00:00:00:00

### Example

The following example specifies a MAC address to be monitored:

```
config switch network-monitor directed
  edit 1
    set monitor-mac 00:25:00:61:64:6d
  next
end
```

## config switch network-monitor settings

Use this command to configure global settings for network monitoring on the FortiSwitch unit.

### Syntax

```
config switch network-monitor settings
  set db-aging-interval <integer>
  set status {disable | enable}
  set survey-mode {disable | enable}
  set survey-mode-interval <integer>
end
```



Variable	Description	Default
db-aging-interval <integer>	Enter the network monitor database aging interval. The value range is 3600-86400 seconds. Set the option to 0 to disable it.	3600
status {disable   enable}	Enable or disable the network monitor.	disable
survey-mode {disable   enable}	Enable or disable the network monitor survey mode.	disable
survey-mode-interval <integer>	Enter the duration for which a network monitor is programmed in hardware in the survey mode. The value range is 120-3600 seconds.	120

## Example

The following example starts network monitoring in survey mode:

```
config switch network-monitor settings
    set status enable
    set survey-mode enable
    set survey-mode-interval 480
end
```

## config switch phy-mode

On FortiSwitch models that provide 40G QSFP (quad small form-factor pluggable) interfaces, you can install a breakout cable to convert one 40G interface into four 10G interfaces. Use this command to configure split ports.

## Notes

- Splitting ports is supported on the following FortiSwitch models:
  - 3032D (ports 5 to 28 are splittable)
  - 3032E (Ports can be split into 4 x 25G when configured in 100G QSFP28 mode or can be split into 4 x 10G when configured in 40G QSFP mode. Use the `set <port-name>-phy-mode disabled` command to disable some 100G ports to allow up to sixty 25G, 10G, or 1G ports.)
  - 524D, 524D-FPOE (ports 29 and 30 are splittable)
  - 548D, 548D-FPOE (ports 53 and 54 are splittable)
  - 1048E (In the 4 x 100G configuration, ports 49, 50, 51, and 52 are splittable as 4 x 25G, 4 x 10G, 4 x 1G, or 2 x 50G. Only two of the available ports can be split.)
  - 1048E (In the 4 x 4 x 25G configuration, ports 49, 50, 51, and 52 are splittable as 4 x 4 x 25G or 2 x 50G. All four ports can be split, but ports 47 and 48 are disabled.)
  - 1048E (In the 6 x 40G configuration, ports 49, 50, 51, 52, 53, 54 are splittable as 4 x 10G or 4 x 1G.)

Use the `set port-configuration ?` command to check which ports are supported for each model.

- Currently, the maximum number of ports supported in software is 64 (including the management port). Therefore, only 10 QSFP ports can be split. This limitation applies to all of the models, but only the 3032D and the 1048E models have enough ports to encounter this limit.
- Starting in FortiOS 6.2.0, splitting ports is supported in FortiLink mode (that is, the FortiSwitch unit managed by a FortiGate unit).
- Starting in FortiSwitchOS 6.4.0, FC-FEC (cl74) is enabled as the default setting for ports that have been split to 4x25G. Use the following commands to change the setting:

```
config switch physical-port
```

```

edit <split_port_name>
    set fec-state {c174 | disabled}
end

```

## Syntax

```

config switch phy-mode
    set port-configuration {default | disable-port54 | disable-port41-48 | 4x100G | 6x40G | 4x4x25G}
    set {<port-name>-phy-mode <single-port| 4x25G | 4x10G | 4x1G | 2x50G}
    ...
end

```

Variable	Description	Default
port-configuration {default   disable-port54   disable-port41-48   4x100G   6x40G   4x4x25G}	<p>For 548D and 548D-FPOE, set this option to <code>disable-port54</code> if only port 53 is splittable and port 54 is unavailable.</p> <p>For 548D and 548D-FPOE, set this option to <code>disable-port41-48</code> if ports 41 to 48 are unavailable, but ports 53 and 54 are splittable.</p> <p>For 1048E, set this option to <code>4x100G</code> to enable the maximum speed (100G) of ports 49 through 52. Ports 53 and 54 are disabled.</p> <p>For 1048E, set this option to <code>6x40G</code> to enable the maximum speed (40G) of ports 49 through 54.</p> <p>For 1048E, set this option to <code>4x4x25G</code> to enable the maximum speed (25G) of ports 49 through 52. Ports 47 and 48 are disabled.</p>	default
port<number>-phy-mode {<port-name>-phy-mode <single-port  4x25G   4x10G   4x1G   2x50G}	<p>Use one entry for each port that supports split ports.</p> <p>Set this option to <code>single-port</code> to use the port at the full base speed without splitting it.</p> <p>For 100G QSFP only, set this option to <code>4x25G</code> to split one port into four subports of 25 Gbps each.</p> <p>For 40G or 100G QSFP only, set this option to <code>4x10G</code> to split one port into four subports of 10Gbps each.</p> <p>For 40G or 100G QSFP only, set this option to <code>4x1G</code> to split one port into four subports of 1 Gbps each.</p> <p>For 100G QSFP only, set this option to <code>2x50G</code> to split one port into two subports of 50 Gbps each.</p>	1x40G

## Example

In the following example, a FortiSwitch 3032D is configured with ports 10, 14, and 28 set to 4x10G:

```

config switch phy-mode
    set port5-phy-mode 1x40G
    set port6-phy-mode 1x40G
    set port7-phy-mode 1x40G
    set port8-phy-mode 1x40G
    set port9-phy-mode 1x40G
    set port10-phy-mode 4x10G

```

```
set port11-phy-mode 1x40G
set port12-phy-mode 1x40G
set port13-phy-mode 1x40G
set port14-phy-mode 4x10G
set port15-phy-mode 1x40G
set port16-phy-mode 1x40G
set port17-phy-mode 1x40G
set port18-phy-mode 1x40G
set port19-phy-mode 1x40G
set port20-phy-mode 1x40G
set port21-phy-mode 1x40G
set port22-phy-mode 1x40G
set port23-phy-mode 1x40G
set port24-phy-mode 1x40G
set port25-phy-mode 1x40G
set port26-phy-mode 1x40G
set port27-phy-mode 1x40G
set port28-phy-mode 4x10G
end
```

In the following example, a FortiSwitch 1048E model is configured so that each port is split into four subports of 25 Gbps each.

```
config switch phy-mode
  set port-configuration 4x4x25G
  set port49-phy-mode 4x25G
  set port50-phy-mode 4x25G
  set port51-phy-mode 4x25G
  set port52-phy-mode 4x25G
end
```

## config switch physical-port

Use this command to configure a physical port.

### Syntax

```
config switch physical-port
  edit <port_name>
    set cdp-status {disable | rx-only | tx-only | tx-rx}
    set description <description_str>
    set dmi-status {disable | enable | global}
    set egress-drop-mode {disabled | enabled}
    set energy-efficient-ethernet {enable | disable}
    set eee-tx-idle-time <integer>
    set eee-tx-wake-time <integer>
    set fec-state {cl74 | cl91 | detect-by-module | disabled}
    set flapguard {enabled | disabled}
    set flap-duration <5-300>
    set flap-rate <1-30>
    set flap-timeout <0-120>
    set flow-control {tx | rx | both | disable}
    set fortilink-p2p {enable | disable}
    set pause-meter-rate <integer>
    set pause-resume {25% | 50% | 75%}
```

```

set l2-learning {enable | disable}
set lldp-profile <profile name>
set lldp-status {tx-only | rx-only | tx-rx | disable}
set loopback {disable | local | remote}
set max-frame-size <bytes_int>
set poe-port-mode {IEEE802_3AF | IEEE802_3AT}
set poe-port-priority {critical-priority | high-priority | low-priority}
set poe-pre-standard-detect {disable | enable}
set poe-status {enable | disable}
set priority-based-flow-control {enable | disable}
set qsfp-low-power-mode {enabled | disabled}
set speed <speed_str>
set status {down | up}
set storm-control-mode {disabled | global | override}
config storm-control
    set broadcast {enable | disable}
    set burst-size-level <0-4>
    set rate [0 | 2-10000000]
    set unknown-multicast {enable | disable}
    set unknown-unicast {enable | disable}
end

```

Variable	Description	Default
<port_name>	Enter the port name.	No default
cdp-status {disable   rx-only   tx-only   tx-rx}	Set the CDP transmit and receive status (LLDP must be enabled in LLDP settings). <ul style="list-style-type: none"> <li>• <code>disable</code> disables CDP transmit and receive.</li> <li>• <code>rx-only</code> enables CDP as receive only.</li> <li>• <code>tx-only</code> enables CDP as transmit only.</li> <li>• <code>tx-rx</code> enables CDP transmit and receive.</li> </ul>	disable
description <description_str>	Optionally enter a description.	No default
dmi-status	Enable or disable DMI access. Set to <code>global</code> to use the global switch setting.	global
egress-drop-mode {disabled   enabled>	Enable or disable egress drop.	enabled
energy-efficient-ethernet {enable   disable}	Enable or disable energy-efficient Ethernet.	disable
eee-tx-idle-time <integer>	Enter the number of microseconds that circuits are turned off to save power. The range is 0-2560 microseconds. This option is available only if energy-efficient-ethernet is enabled.	60
eee-tx-wake-time <integer>	Enter the number of microseconds during which no data is transmitted while the circuits that were turned off are being restarted. The range is 0-2560 microseconds. This option is available only if energy-efficient-ethernet is enabled.	30

Variable	Description	Default
fec-state {cl74   cl91   detect-by-module   disabled}	Set the Forward Error Correction (FEC) state: <ul style="list-style-type: none"> <li>cl74—Enable Clause 74 RS-FEC, which only applies to 25 Gbps.</li> <li>cl91—Enable Clause 91 RS-FEC, which only applies to 100 Gbps.</li> <li>detect-by-module—Automatically detect whether FEC is supported by the module. This option applies to the 25G and 100G ports of the FS-1048E and FS-3032E models; this option also applies to the split ports of the FS-1048E and FS-3032E models.</li> <li>disabled—Disable FEC.</li> </ul>	detect-by-module
flapguard {enabled   disabled}	Enable or disable flap guard for this port.	disabled
flap-duration <5-300>	After enabling the port flap guard, set the number of seconds during which the flap rate is counted.	30
flap-rate <1-30>	After enabling the port flap guard, set how many times that a port's status changes during a specified number of seconds before the flap guard is triggered.	5
flap-timeout <0-120>	After enabling the port flap guard, set the number of minutes before flap guard resets. Setting this value to 0 means that there is no timeout.	0
flow-control {tx   rx   both   disable}	Set flow control: <ul style="list-style-type: none"> <li>tx—Enable transmit pause only.</li> <li>rx—Enable receive pause only.</li> <li>both—Enable both transmit and receive pause.</li> <li>disable—Disable flow control.</li> </ul>	disable
fortilink-p2p {enable   disable}	Enable or disable running FortiLink mode over a point-to-point layer-2 network.	disable
pause-meter-rate <integer>	Enter the number of kilobits for the ingress metering rate. The range is 64 to 2147483647. Set to 0 to disable. Available if flow-control is set to tx.	0
pause-resume {25%   50%   75%}	Enter the percentage of the threshold to resume traffic to the ingress port. Available if flow-control is set to tx and pause-meter-rate is set to a nonzero value.	75%
l2-learning	Enable or disable dynamic IP learning for this interface	enabled
lldp-profile	Enter the LLDP profile name for this port.	default
lldp-status	Set LLDP status for this port: <ul style="list-style-type: none"> <li>tx-only — enable transmit only</li> <li>rx-only — enable receive only</li> <li>tx-rx — enable both transmit and receive</li> <li>disable — disable LLDP</li> </ul>	tx-rx

Variable	Description	Default
loopback {disable   local   remote}	Set whether the physical port loops back on itself, either locally or remotely: <ul style="list-style-type: none"> <li>Select <code>local</code> for a physical-layer loopback. If the hardware does not support a physical-layer loopback, a MAC-address loopback is used instead.</li> <li>Select <code>remote</code> for a physical-layer lineside loopback.</li> </ul>	disable
max-frame-size <bytes_int>	Set the maximum frame size. The range is 68 to 16360. <b>NOTE:</b> For the eight models in the 1xxE series, this command is under the <code>config switch global</code> command.	9216
poe-port-mode {IEEE802_3AF   IEEE802_3AT}	Set the PoE port mode to IEEE802.3A or IEEE802.3AT.	IEEE802_3AT
poe-port-priority {critical-priority   high-priority   low-priority}	Set the port priority. If there is not enough power, power is allotted first to critical-priority ports, then to high-priority ports, and then to low-priority ports.	low-priority
poe-pre-standard-detect {disable   enable}	Enable or disable PoE pre-standard detection. <b>NOTE:</b> PoE pre-standard detection is a global setting for the following FortiSwitch models: FSR-112D-POE, FS-548D-FPOE, FS-524D-FPOE, FS-108D-POE, FS-224D-POE, FS-108E-POE, FS-108E-FPOE, FS-124E-POE, FS-124E-FPOE, 148F-POE, and 148F-FPOE. For the other FortiSwitch PoE models, PoE pre-standard detection is set on each port.	disable
poe-status {enable   disable}	Enable Power over Ethernet. This option is only available with the FortiSwitch-324B-POE.	enable
priority-based-flow-control {enable   disable}	Enable priority-based flow control to avoid frame loss by stopping incoming traffic when a queue is congested. When priority-based flow control is disabled, 802.3 flow control can be used.	disable
qsfp-low-power-mode {enabled   disabled}	Enable or disable the low-power mode on FortiSwitch models with QSFP (quad small form-factor pluggable) ports.	disabled

Variable	Description	Default
speed <speed_str>	Set the speed of this port. Values depend on the switch model and port. For example: <ul style="list-style-type: none"> <li>1000auto—Auto-negotiation (1 Gbps full-duplex only).</li> <li>100full—100 Mbps full-duplex.</li> <li>100half—100 Mbps half-duplex.</li> <li>10full—10 Mbps full-duplex.</li> <li>10half—10 Mbps half-duplex.</li> <li>auto—Auto-negotiation.</li> <li>10000cr—10 Gbps copper interface.</li> <li>10000full—10 Gbps full-duplex.</li> <li>10000sr—10 Gbps SFI interface.</li> <li>1000full—1 Gbps full-duplex.</li> <li>auto-module—Maximum speed supported by module.</li> </ul>	auto
status {down   up}	Set the administrative status of this interface: up or down.	up
storm-control-mode {disabled   global   override}	By default, you configure storm control on a system-wide level. Set this option to <code>override</code> if you want to configure storm control on a per-port level using the <code>config storm-control</code> command, which is only available when the <code>storm-control-mode</code> is set to <code>override</code> . Set this option to <code>disabled</code> to deactivate port-level storm-control configuration.	global
<b>config storm-control</b>		
broadcast {enable   disable}	Enable or disable storm control for broadcast traffic.	disable
burst-size-level <0-4>	Set the burst-size level for storm control. Use a higher number to handle bursty traffic. The maximum number of packets or bytes allowed for each burst-size level depends on the switch model.  <b>NOTE:</b> This command is not available for the FS-108E, FS-108E-POE, FS-108-FPOE, FS-124E, FS-124E-POE, and FS-124E-FPOE models.	0
rate [0   2-10000000]	Specify the rate as packets-per-second. If you set the rate to zero, the system drops all packets (for the enabled traffic types).	500
unknown-multicast {enable   disable}	Enable or disable storm control for unknown multicast traffic.	disable
unknown-unicast {enable   disable}	Enable or disable storm control for unknown unicast traffic.	disable

## Example

In the following example, port 4 is configured:

```
config switch physical-port
edit "port4"
```

```

        set lldp-profile "Forti670i"
        set speed auto
    next
end

```

## config switch ptp policy

Use this command to configure the Precision Time Protocol (PTP) policy.

### Syntax

```

config switch ptp policy
    edit {default | <policy_name>}
        set status {enable | disable}
    next
end

```

Variable	Description	Default
{default   <policy_name>}	Enter the name of the PTP policy or use the default PTP policy.	No default
status {enable   disable}	Enable or disable the PTP policy. The PTP policy will not take effect until the mode is set under the <code>config switch ptp settings</code> command.	disable

### Example

```

config switch ptp policy
    edit "newptp"
        set status enable
    next
end

```

## config switch ptp settings

Use this command to configure the Precision Time Protocol (PTP) global settings.

### Syntax

```

config switch ptp settings
    set mode {disable | transparent-e2e | transparent-p2p}
end

```

Variable	Description	Default
mode {disable   transparent-e2e   transparent-p2p}	Enable or disable the PTP mode: <ul style="list-style-type: none"> <li><code>disable</code>—Disable the PTP mode. The packets are forwarded without changes to the correction field.</li> <li><code>transparent-e2e</code>—Enable the end-to-end transparent clock.</li> </ul>	disable



Variable	Description	Default
	<ul style="list-style-type: none"> <li><code>transparent-p2p</code>—Enable the peer-to-peer transparent clock.</li> </ul>	

## Example

```
config switch ptp settings
    set mode transparent-e2e
end
```

## config switch qos dot1p-map

Use this command to configure a dot1p map. A dot1p map defines a mapping between IEEE 802.1p CoS values (from incoming packets on a trusted interface) and the egress queue values. For an example, see [Appendix: FortiSwitch QoS template on page 436](#).

**NOTE:** You can configure only one dot1p map per switch on the FS-108E, FS-108E-POE, FS-108E-FPOE, FS-124E, FS-124E-POE, FS-124E-FPOE, FS-148E, and FS-148E-POE models.

## Syntax

```
config switch qos dot1p-map
    edit <dot1p map name>
        set description <text>
        set [priority-0|priority-1|priority-2|...priority-7] <queue number>
        set egress-pri-tagging {disable | enable}
    next
end
```

Variable	Description	Default
<dot1p map name>	Enter the name of a dot1p map.	No default
<text>	Enter a description of the dot1p map.	No default
[priority-0 priority-1 priority-2 ...priority-7] <queue number>	Set the priority of each queue.	queue-0
egress-pri-tagging {disable   enable}	Enable or disable priority tagging on outgoing frames. <b>NOTE:</b> This command is not available on the FS-108E, FS-108E-POE, FS-108E-FPOE, FS-124E, FS-124E-POE, FS-124E-FPOE, FS-148E, and FS-148E-POE models.	disable

## Example

```
config switch qos dot1p-map
    edit "test1"
        set priority-0 queue-2
        set priority-1 queue-0
        set priority-2 queue-1
        set priority-3 queue-3
```

```

    set priority-4 queue-4
    set priority-5 queue-5
    set priority-6 queue-6
    set priority-7 queue-7
    set egress-pri-tagging enable
  next
end

```

Values that are not explicitly included in the map will follow the default mapping, which maps each priority (0-7) to queue 0.

If an incoming packet contains no CoS value, the switch assigns a CoS value of zero. Use the `set default-cos <interface>` command to configure a different default CoS value. The valid range is from 0 to 7. The configured default CoS only applies if you also set `trust-dot1p-map` on the interface.

## config switch qos ip-dscp-map

Use this command to configure a DSCP map. A DSCP map defines a mapping between IP Precedence or Differentiated Services Code Point (DSCP) values and the egress queue values. For an example, see [Appendix: FortiSwitch QoS template on page 436](#).

**NOTE:** You can configure only one DSCP map per switch on the FS-108E, FS-108E-POE, FS-108E-FPOE, FS-124E, FS-124E-POE, FS-124E-FPOE, FS-148E, and FS-148E-POE models.

### Syntax

```

config switch qos ip-dscp-map
  edit <ip-dscp map name>
    set description <text>
    config map
      edit <entry-name>
        set diffserv [ [ AF11 | AF12 | AF13 | AF21 | AF22 | AF23 | AF31 | AF32 | AF33 |
                        AF41 | AF42 | AF43 | CS0 | CS1 | CS2 | CS3 | CS4 | CS5 | CS6 | CS7 | EF ]
        set ip-precedence [ Network Control | Internetwork Control | Critic/ECP | Flash
                           Override | Flash, Immediate | Priority | Routine ]
        set value <dscp raw value>
        set cos-queue <queue number>
      next
    end
  next
end

```

Variable	Description	Default
<ip-dscp map name>	Enter the name of a DSCP map.	No default
<text>	Enter a description of the DSCP map.	No default
<entry-name>	Enter a unique integer to create a new entry.	No default

Variable	Description	Default
diffserv [ [ AF11   AF12   AF13   AF21   AF22   AF23   AF31   AF32   AF33   AF41   AF42   AF43   CS0   CS1   CS2   CS3   CS4   CS5   CS6   CS7   EF ]	Set the differentiated service.	No default
ip-precedence [ Network Control   Internetwork Control   Critic/ECP   Flash Override   Flash, Immediate   Priority   Routine ]	Set the IP precedence.	No default
value <dscp raw value>	enter the raw value of DSCP (0-63).	No default
cos-queue <queue number>	Enter the CoS queue number.	0

## Example

The following example defines a mapping for two of the DSCP values:

```
config switch qos ip-dscp-map
  edit "m1"
    config map
      edit "e1"
        set cos-queue 0
        set ip-precedence Immediate
      next
      edit "e2"
        set cos-queue 3
        set value 13
      next
    end
  next
end
```

Values that are not explicitly included in the map will follow the default mapping, which assigns queue 0 for all DSCP values.

## config switch qos qos-policy

Use this command to configure QoS policies. For an example, see [Appendix: FortiSwitch QoS template on page 436](#).

In a QoS policy, you set the scheduling mode (Strict, Round Robin, Weighted Round Robin) for the policy, and configure one or more CoS queues.

## Syntax

```
config switch qos qos-policy
  edit <policy_name>
    set rate-by {kbps | percent}
    set schedule {strict | round-robin | weighted}
    config cos-queue
```

```

edit [queue-0 ... queue-7]
    set description <text>
    set drop-policy {taildrop | weighted-random-early-detection}
    set ecn {enable | disable}
    set max-rate <rate kbps>
    set min-rate <rate kbps>
    set max-rate-percent <percentage>
    set min-rate-percent <percentage>
    set weight <value>
    set wred-slope <value>
next
end
next
end

```

Variable	Description	Default
<policy_name>	Enter the name of the QoS policy.	No default
rate-by {kbps   percent}	Set whether the CoS queue rate is measured in kbps or by percentage.	kbps
schedule {strict   round-robin   weighted}	Set the CoS queue scheduling. <ul style="list-style-type: none"> <li>strict—The queues are served in descending order (of queue number), so higher number queues receive higher priority. The purpose of the strict scheduling mode is to provide lower latency service to higher classes of traffic. However, if the interface experiences congestion, the lower priority traffic could be starved.</li> <li>round-robin— In round robin mode, the scheduler visits each backlogged queue, servicing a single packet from each queue before moving on to the next one. The purpose of round robin scheduling is to provide fair access to the egress port bandwidth.</li> <li>weighted— Each of the eight egress queues is assigned a weight value ranging from 0 to 63. The purpose of weighted round robin scheduling is to provide prioritized access to the egress port bandwidth, such that queues with higher weight get more of the bandwidth, but lower priority traffic is not starved.</li> </ul>	round-robin
[queue-0 ... queue-7]	Set the CoS queue to update.	No default
description <text>	Enter a description of the CoS queue.	No default
drop-policy {taildrop   weighted-random-early-detection}	Set the CoS queue drop policy. <ul style="list-style-type: none"> <li>taildrop—When the queue is full, new packets are dropped.</li> <li>weighted-random-early-detection—When the queue reaches the packet-dropping threshold, packets start getting dropped randomly based on the probability defined in the <code>wred-slope</code> setting.</li> </ul> <p><b>NOTE:</b> For the FS-108E, FS-108E-POE, FS-108E-FPOE, FS-124E, FS-124E-POE, FS-124E-FPOE, FS-148E, and FS-</p>	taildrop

Variable	Description	Default
	148E-POE models, set the CoS queue drop policy under the <code>config switch global</code> command.	
<code>set ecn {enable   disable}</code>	If you select random early detection in the CLI, you can enable explicit congestion notification (ECN) marking to indicate that congestion is occurring without just dropping packets. If you disable this option, the normal queue drop policy applies.	disable
<code>max-rate &lt;rate kbps&gt;</code>	If you set the rate-by to kbps, enter the maximum rate in kbps. Set the value to 0 to disable. <b>NOTE:</b> For the FS-108E, FS-108E-POE, FS-108E-FPOE, FS-124E, FS-124E-POE, FS-124E-FPOE, FS-148E, and FS-148E-POE models, the switch rounds the <code>max-rate</code> value to the nearest multiple of 16 internally. If the rounding result is 0, <code>max-rate</code> is disabled internally.	0
<code>min-rate &lt;rate kbps&gt;</code>	If you set the rate-by to kbps, enter the minimum rate in kbps. Set the value to 0 to disable. <b>NOTE:</b> This command is not available on the FS-108E, FS-108E-POE, FS-108E-FPOE, FS-124E, FS-124E-POE, FS-124E-FPOE, FS-148E, and FS-148E-POE models.	0
<code>max-rate-percent &lt;percentage&gt;</code>	If you set the rate-by to percent, enter the maximum rate as a percentage of the link speed.	0
<code>min-rate-percent &lt;percentage&gt;</code>	If you set the rate-by to percent, enter the minimum rate as a percentage of the link speed. <b>NOTE:</b> This command is not available on the FS-108E, FS-108E-POE, FS-108E-FPOE, FS-124E, FS-124E-POE, FS-124E-FPOE, FS-148E, and FS-148E-POE models.	0
<code>weight &lt;value&gt;</code>	Enter the weight of weighted round robin scheduling. (applicable if the policy schedule is weighted )	1
<code>wred-slope &lt;value&gt;</code>	Enter the slope of WRED drop probability. <b>NOTE:</b> For the FS-108E, FS-108E-POE, FS-108E-FPOE, FS-124E, FS-124E-POE, FS-124E-FPOE, FS-148E, and FS-148E-POE models, set the QoS RED/WRED drop probability under the <code>config switch global</code> command.	45

## Example

The following example defines a QoS policy for queue 0:

```
config switch qos qos-policy
  edit policy1
    set rate-by kbps
    set schedule weighted
  config cos-queue
    edit queue-0
      set description "QoS policy for queue 0"
      set drop-policy weighted-random-early-detection
      set max-rate 20
```

```

        set min-rate 10
        set weight 5
        set wred-slope 15
    end
end

```

## config switch quarantine

**NOTE:** This command is available only in FortiLink mode.

Use this command to specify which MAC addresses to quarantine on the FortiSwitch unit.

### Syntax

```

config switch quarantine
    edit <MAC_address_to_quarantine>
        set cos-queue <0-7>
        set description <string>
        set drop {enable | disable}
        set policer <integer>
    end
end

```

Variable	Description	Default
<MAC_address_to_quarantine>	Enter the MAC address to quarantine.	No default
cos-queue <0-7>	Set the class-of-service queue for the quarantined device traffic. Use the <code>unset cos-queue</code> command to disable this setting.	No default
description <string>	Enter an optional description of the quarantined MAC address.	No default
drop {enable   disable}	Enable or disable whether quarantined device traffic is dropped.	disable
policer <integer>	Set the ACL policer for the quarantined device traffic.	0

## config switch raguard-policy

Use this command to specify the criteria that router advertisement (RA) messages must match before the RA messages are forwarded. If the RA messages match the criteria in the RA-guard policy, they are forwarded. If the RA messages do not match the criteria in the RA-guard policy, they are dropped.

IPv6 RA guard is supported on 2xx models and higher.

### Syntax

```

config switch raguard-policy
    edit <RA-guard policy name>
        set device-role {host | router}
        set managed-flag {Off | On}
        set other-flag {Off | On}
        set max-hop-limit <0-255>
        set min-hop-limit <0-255>
    end
end

```

```

    set max-router-preference {high | medium | low}
    set match-src-addr <name_of_IPv6_access_list>
    set match-prefix <name_of_IPv6_prefix_list>
  next
end

```

Variable	Description	Default
<RA-guard policy name>	Enter the name of the RA-guard policy.	No default
device-role {host   router}	Set whether this policy applies to hosts or routers. If this option is set to <code>host</code> , all RA messages are dropped. If this option is set to <code>router</code> , the policy checks the other specified criteria.	host
managed-flag {Off   On}	Set to <code>On</code> for the policy to accept RA messages that are flagged with the M (managed address configuration) flag; if the RA messages are not flagged, they are dropped.  Set to <code>Off</code> for the policy to accept RA messages that <i>are not</i> flagged with the M flag; if the RA messages are flagged, they are dropped.  If this option is not set, the policy skips this check.	No default
other-flag {Off   On}	Set to <code>On</code> for the policy to accept RA messages that are flagged with the O (other configuration) flag; if the RA messages are not flagged, they are dropped.  Set to <code>Off</code> for the policy to accept RA messages that <i>are not</i> flagged with the O flag; if the RA messages are flagged, they are dropped.  If this option is not set, the policy skips this check.	No default
max-hop-limit <0-255>	Enter the maximum hop number for the policy to accept RA messages with a hop number equal or less than this value.  If this option is not set, the policy skips this check.	0
min-hop-limit <0-255>	Enter the minimum hop number for the policy to accept RA messages with a hop number equal or more than this value.  If this option is not set, the policy skips this check.	0
max-router-preference {high   medium   low}	Set the default router preference for the policy to accept RA messages with the router preference equal or less than this setting. When the router preference of RA messages is not set as high, medium, or low, RA guard acts as if the router preference was set to medium.  If this option is not set, the policy skips this check.	No default
match-src-addr <name_of_IPv6_access_list>	Enter the name of the IPv6 access list for the policy to check if the source IPv6 address of the RA message matches an allowed address. The IPv6 access list must be created (with the <code>config router access-list6</code> command) before it is used in a policy.	No default

Variable	Description	Default
match-prefix <name_of_IPv6_prefix_list>	Enter the name of the IPv6 prefix list for the policy to check if the IPv6 address prefix of the RA message matches an allowed prefix. The IPv6 prefix list must be created (with the <code>config router prefix-list6</code> command) before it is used in a policy.	No default

## Example

The following example creates an IPv6 RA-guard policy:

```
config switch raguard-policy
  edit RApolicy1
    set device-role router
    set managed-flag On
    set other-flag On
    set max-hop-limit 100
    set min-hop-limit 5
    set max-router-preference medium
    set match-src-addr accesslist1
    set match-prefix prefixlist1
  next
end
```

## config switch security-feature

Use this command to configure security checks for incoming TCP/UDP packets. The packet is dropped if the system detects the specified condition.

### Syntax (for models FS108D-POE, FS112D-POE, FS224D-POE)

```
config switch security-feature
  set tcp-syn-data {enable | disable}
  set tcp-udp-port-zero {enable | disable}
  set tcp_flag_zero {enable | disable}
  set tcp_flag_FUP {enable | disable}
  set tcp_flag_SF {enable | disable}
  set tcp_flag_SR {enable | disable}
  set tcp_frag_ipv4_icmp {enable | disable}
  set tcp_arp_mac_mismatch {enable | disable}
end
```

Variable	Description	Default
tcp-syn-data	TCP SYN packet contains additional data (possible DoS attack).	disable
tcp-udp-port-zero	TCP or UDP packet has source or destination port set to zero.	disable
tcp_flag_zero	TCP packet with all flags set to zero.	disable
tcp_flag_FUP	TCP packet with FIN, URG and PSH flag set.	disable



Variable	Description	Default
tcp_flag_SF	TCP packet with SYN and FIN flag set.	disable
tcp_flag_SR	TCP packet with SYN and RST flag set.	disable
tcp_frag_ipv4_icmp	Fragmented ICMPv4 packet.	disable
tcp_arp_mac_mismatch	ARP packet with MAC source address mismatch between the Layer 2 header and the ARP packet payload.	disable

### Syntax (for all other models)

```

config switch security-feature
    set sip-eq-dip {enable | disable}
    set tcp-flag {enable | disable}
    set tcp-port-eq {enable | disable}
    set tcp-flag-FUP {enable | disable}
    set tcp-flag-SF {enable | disable}
    set v4-first-frag {enable | disable}
    set udp-port-eq {enable | disable}
    set tcp-hdr-partial {enable | disable}
    set macsa-eq-macda {enable | disable}
    set allow-mcast-sa {enable | disable}
    set allow-sa-mac-all-zero {enable | disable}
end

```

Variable	Description	Default
sip-eq-dip	TCP packet with a source IP address equal to the destination IP address.	disable
tcp_flag	DoS attack checking for TCP flags.	disable
tcp-port-eq	TCP packet with source and destination TCP ports equal.	disable
tcp-flag-FUP	TCP packet with FIN, URG and PSH flags set, and sequence number is zero.	disable
tcp-flag-SF	TCP packet with SYN and FIN flag set.	disable
v4-first-frag	DoS attack checking for IPv4 first fragment.	disable
udp-port-eq	IP packet with source and destination UDP ports equal.	disable
tcp-hdr-partial	TCP packet with partial header.	disable
macsa-eq-macda	Packet with source MAC address equal to destination MAC address.	disable
allow-mcast-sa	Ethernet packet whose source MAC address is multicast.	enable
allow-sa-mac-all-zero	Ethernet packet whose source MAC address is all zeros.	enable

### Example

The following example configures security checks for incoming TCP/UDP packets:

```

config switch security-feature
    set sip-eq-di enable

```

```

set tcp-flag enable
set tcp-port-eq enable
set tcp-flag-FUP enable
set tcp-flag-SF enable
set v4-first-frag enable
set udp-port-eq enable
set tcp-hdr-partial enable
set macsa-eq-macda enable
set allow-mcast-sa disable
set allow-sa-mac-all-zero disable
end

```

## config switch static-mac

Use this command to configure one (or more) static MAC address on an interface.

### Syntax

```

config switch static-mac
edit <sequence number>
    set description <optional_string>
    set interface <interface_name>
    set mac <static_MAC_address>
    set type {sticky | static}
    set vlan-id <1-4095>
end

```

Variable	Description	Default
<sequence number>	Enter a sequence number.	No default
description <optional_string>	Optional. Enter a description of the static MAC address.	No default
interface <interface_name>	Enter the interface name.	No default
mac <static_MAC_address>	Enter the static MAC address.	00:00:00:00:00:00
type {sticky   static}	Set the MAC address as a persistent (sticky) address or a static address.	static
vlan-id <1-4095>	Enter the VLAN identifier.	1

### Example

```

config switch static-mac
edit 1
    set description "first static MAC address"
    set interface port10
    set mac d6:dd:25:be:2c:43
    set type static
    set vlan-id 10
end

```

## config switch storm-control

Use this command to configure storm control.

### Syntax

```
config switch storm-control
    set broadcast {enable | disable}
    set burst-size-level <0-4>
    set rate [0 | 2-100000000]
    set unknown-multicast {enable | disable}
    set unknown-unicast {enable | disable}
end
```

Variable	Description	Default
broadcast {enable   disable}	Enable or disable storm control for broadcast traffic.	disable
burst-size-level <0-4>	Set the burst-size level for storm control. Use a higher number to handle bursty traffic. The maximum number of packets or bytes allowed for each burst-size level depends on the switch model.	0
rate [0   2-100000000]	Specify the rate as packets-per-second. If you set the rate to zero, the system drops all packets (for the enabled traffic types).	500
unknown-multicast {enable   disable}	Enable or disable storm control for unknown multicast traffic.	disable
unknown-unicast {enable   disable}	Enable or disable storm control for unknown unicast traffic.	disable

### Example

```
config switch storm-control
    set broadcast enable
    set burst-size-level 2
    set rate 1000
    set unknown-multicast enable
    set unknown-unicast enable
end
```

## config switch stp instance

Use this command to configure an STP instance.

### Syntax

```
config switch stp instance
    edit <instance_id>
        set priority <priority_int>
        set vlan-range <vlan_map>
    config stp-port
```

```

        edit <port name>
            set cost <cost_int>
            set priority <priority_int>
        end
    end
end

```

Variable	Description	Default
<instance_id>	Enter an instance identifier. The range is 0-32 for 5xx models and higher. For all other models, the range is 0 - 15.	No default
priority <priority_int>	Set the STP priority. The acceptable priority values are 0, 12288, 16384, 20480, 24576, 28672, 32768, 36864, 4096, 40960, 45056, 49152, 53248, 57344, 61440, and 8192.	32768
vlan-range <vlan_map>	Enter the VLANs to which STP applies. <vlan_map> is a comma-separated list of VLAN IDs or VLAN ID ranges, for example "1,3-4,6,7,9-100" .	No default
<b>config stp-port</b>		
<port name>	Enter the name of the port.	No default
cost <cost_int>	Enter the cost of using this interface. Use <code>set cost ?</code> for suggested cost values based on link speed.	0
priority <priority_int>	Enter the priority of this interface. Use <code>set priority ? to list</code> the acceptable priority values.	128

## Example

```

config switch stp instance
    edit "1"
        set priority 8192
    config stp-port
        edit "port18"
            set cost 0
            set priority 128
        next
        edit "port19"
            set cost 0
            set priority 128
        next
    end
    set vlan-range 5 7 11-20
end

```

## config switch stp settings

Use this command to configure STP settings.

### Syntax

```

config switch stp settings
    set flood {enable | disable}

```

```

set forward-time <fseconds_int>
set hello-time <hseconds_int>
set max-age <age>
set max-hops <hops_int>
set mclag-stp-bpdu {both | single}
set name <name_str>
set revision <rev_int>
set status {enable | disable}
end

```

Variable	Description	Default
flood {enable   disable}	Set to <b>enable</b> if you want the STP packets arriving at any port to pass through the switch without being processed. Set to <b>disable</b> if you want to block STP packets arriving at any port.  This command is available only when <b>status</b> is set to <b>disable</b> .	disable
forward-time <fseconds_int>	Enter the forwarding delay in seconds. Range 4 to 30.	15
hello-time <hseconds_int>	Enter the hello time in seconds. Range 1 to 10.	2
max-age <age>	Enter the maximum age. Range 6 to 40.	20
max-hops <hops_int>	Enter the maximum number of hops. Range 1 to 40.	20
mclag-stp-bpdu {both   single}	Set to <b>both</b> to allow both core switches of an MCLAG to transmit STP BPDUs. Set to <b>single</b> to prevent both core switches of an MCLAG from transmitting STP BPDUs.	both
name <name_str>	Enter a string value for the name.	No default
revision <rev_int>	Range 0 to 65535.	0
status {enable   disable}	Enable or disable status report.	enable

## Example

```

config switch stp settings
set forward-time 15
set hello-time 5
set max-age 20
set max-hops 20
set name "region1"
set revision 1
set status enable
end

```

## config switch trunk

Use this command to configure link aggregation.

### Syntax

```
config switch trunk
```

```

edit <trunk name>
    set aggregator-mode {bandwidth | count}
    set auto-isl <integer>
    set bundle [enable|disable]
        set min_bundle <integer>
        set max_bundle <integer>
    set description <description_str>
    set fortilink <integer>
    set isl-fortilink <integer>
    set lacp-speed {slow | fast}
    set mclag {disable | enable}
    set mclag-icl {disable | enable}
    set member-withdrawal-behavior {block | forward}
    set members <intf1 ... intfN>
    set mode {fortinet-trunk | lacp-active | lacp-passive | static}
    set port-selection-criteria {src-ip | src-mac | dst-ip | dst-mac | src-dst-ip | src-
        dst-mac}
    set static-isl {enable | disable}
    set static-isl-auto-vlan {enable | disable}
end

```

Variable	Description	Default
<trunk name>	Enter a name for the trunk.	No default
aggregator-mode {bandwidth   count}	Select how an aggregator groups ports when the trunk is in LACP mode. Select <code>bandwidth</code> to group ports into the aggregator with the largest bandwidth. Select <code>count</code> to group ports into the aggregator with the most ports.	bandwidth
auto-isl <integer>	Automatically forms an ISL-encapsulated trunk, up to the specified maximum size.	0
bundle [enable disable]	Enable or disable bundling	disable
min_bundle	Set the minimum size of the bundle. This option is available only when <code>bundle</code> has been enabled.	1
max_bundle	Set the maximum size of the bundle. This option is available only when <code>bundle</code> has been enabled.	24
description <description_str>	Optionally, enter a description.	No default
fortilink <integer>	Set the FortiLink trunk.	0
isl-fortilink <integer>	Set the ISL FortiLink trunk.	0
lacp-speed {slow   fast}	Select <code>fast</code> to send an LACP message every second. Select <code>slow</code> to send an LACP message every 30 seconds.	slow
mclag {disable   enable}	Enable or disable multichassis LAG (MCLAG).	disable
mclag-icl {disable   enable}	Enable or disable the MCLAG inter-chassis link (ICL).	disable
member-withdrawal-behavior {block   forward}	Select how the port behaves after it withdraws because of loss-of-control packets.	block
members <intf1 ... intfN>	Enter the names of the interfaces that belong to this trunk. Separate the names with spaces.	No default

Variable	Description	Default
mode {fortinet-trunk   lacp-active   lacp-passive   static}	Select the link aggregation mode: <ul style="list-style-type: none"> <li>• <code>fortinet-trunk</code>—use heartbeat packets to detect whether trunk members are available.</li> <li>• <code>lacp-active</code>—use active LACP 802.3ad aggregation</li> <li>• <code>lacp-passive</code>—use passive LACP 802.3ad aggregation</li> <li>• <code>static</code>—use static aggregation, ignoring and not sending control messages</li> </ul>	static
port-selection-criteria {src-ip   src-mac   dst-ip   dst-mac   src-dst-ip   src-dst-mac}	Select the port selection criteria: <ul style="list-style-type: none"> <li>• <code>src-ip</code>—source IP address</li> <li>• <code>src-mac</code>—source MAC address</li> <li>• <code>dst-ip</code>—destination IP address</li> <li>• <code>dst-mac</code>—destination MAC address</li> <li>• <code>src-dst-ip</code>—both source and destination IP addresses</li> <li>• <code>src-dst-mac</code>—both source and destination MAC addresses</li> </ul>	src-dst-ip
static-isl {enable   disable}	Available only in FortiLink mode. Enable to manually create an inter-switch link (ISL) trunk.	default
static-isl-auto-vlan {enable   disable}	Available only in FortiLink mode. Enable or disable automatic VLAN configuration on the ISL.	default

## Heartbeat Trunk

When you set the trunk mode to `fortinet-trunk`, the following configuration fields are available:

```
config switch trunk
  edit hb-trunk
    set mode fortinet-trunk
    set port-selection-criteria {src-ip | src-mac | dst-ip | dst-mac | src-dst-ip | src-
      dst-mac}
    set description <description_str>
    set members <port> [<port>] ... [<port>]
    set member-withdrawal-behavior {block | forward}
    set max-miss-heartbeats <3-32>
    set hb-out-vlan <int>
    set hb-in-vlan <int>
    set hb-src-ip <x.x.x.x>
    set hb-dst-ip <x.x.x.x>
    set hb-src-udp-port <int>
    set hb-dst-udp-port <int>
    set hb-verify {enable | disable}
  end
```

Variable	Description	Default
port-selection-criteria {src-ip   src-mac   dst-ip   dst-mac   src-dst-ip   src-dst-mac}	Select the port selection criteria: <ul style="list-style-type: none"> <li>• <code>src-ip</code> — source IP address</li> <li>• <code>src-mac</code> — source MAC address</li> <li>• <code>dst-ip</code> — destination IP address</li> </ul>	src-dst-ip

Variable	Description	Default
	<ul style="list-style-type: none"> <li><code>dst-mac</code> — destination MAC address</li> <li><code>src-dst-ip</code> — both source and destination IP addresses</li> <li><code>src-dst-mac</code> — both source and destination MAC addresses</li> </ul>	
<code>description &lt;description_str&gt;</code>	Optionally, enter a description.	No default
<code>members &lt;port&gt; [&lt;port&gt;] ... [&lt;port&gt;]</code>	Enter the names of the ports that belong to this trunk. Separate the names with spaces.	No default
<code>member-withdrawal-behavior {block   forward}</code>	Set the port behavior after it withdraws because of the loss of control packets.	block
<code>max-miss-heartbeats &lt;3-32&gt;</code>	Enter the maximum number of heartbeat messages that can be lost before the FortiGate is deemed to be unavailable. Set a value between 3 and 32.	10
<code>hb-out-vlan</code>	Enter the outgoing VLAN value.	0
<code>hb-in-vlan</code>	Enter the incoming VLAN value.	0
<code>hb-src-ip</code>	Enter the source IP address for the heartbeat packet.	0.0.0.0
<code>hb-dst-ip</code>	Enter the destination IP address for the heartbeat packet.	0.0.0.0
<code>hb-src-udp-port</code>	Enter the source UDP port value for the heartbeat packet.	0
<code>hb-dst-udp-port</code>	Enter the destination UDP port value for the heartbeat packet.	0
<code>hb-verify</code>	Enable or disable heartbeat packet verification.	disable

## Example

The following example creates trunk tr1 with heartbeat capability:

```
config switch trunk
    edit "tr1"
        set mode fortinet-trunk
        set members "port1" "port2"
        set hb-out-vlan 300
        set hb-in-vlan 500
        set hb-src-ip 10.105.7.200
        set hb-dst-ip 10.105.7.199
        set hb-src-udp-port 12345
        set hb-dst-udp-port 54321
        set hb-verify enable
    next
end
```

## config switch virtual-wire

Use this command to forward traffic between two ports with minimal filtering or packet modifications. The VLAN setting is optional.



**NOTE:** Virtual-wire ports will not be able to transmit or receive packets from other members of the VLAN or other virtual-wires that use the same VLAN. The VLAN should not have complex configurations such as private VLAN.

## Syntax

```
config switch virtual-wire
  edit <id>
    set first-member <port>
    set second-member <port>
    set vlan <1-4095>
  next
end
```

Variable	Description	Default
<id>	Enter a unique integer to create a new entry.	No default
first-member <port>	first member in the virtual-wire pair	No default
second-member <port>	second member in the virtual-wire pair	No default
vlan <1-4095>	VLAN used. The VLAN can be shared between virtual-wires and non-virtual-wire ports	4011

## Example

The following example creates a virtual wire between ports 7 and 8:

```
config switch virtual-wire
  edit 1
    set first-member "port7"
    set second-member "port8"
    set vlan 70
  next
end
```

## config switch vlan

Use this command to configure VLANs.

## Syntax

```
config switch vlan
  edit <vlan id>
    set access-vlan {enable | disable}
    set cos-queue <0-7>
    set description <description_str>
    set dhcp-snooping {enable | disable}
      set dhcp-snooping-verify-mac {enable | disable}
      set dhcp-snooping-option82 {enable | disable}
      set arp-inspection {enable | disable}
    set dhcp6-snooping {enable | disable}
    set igmp-snooping {enable | disable}
      set igmp-snooping-querier {enable | disable}
      set igmp-snooping-querier-addr <IPv4_address>
```

```

        set igmp-snooping-querier-version {2|3}
        set igmp-snooping-fast-leave {enable | disable}
        set igmp-snooping-proxy {enable | disable}
    set lan-segment {enable | disable}
    set lan-subvlans <VLAN_identifiers>
    set learning {enable | disable}
    set learning-limit <integer>
    set mld-snooping {enable | disable}
        set mld-snooping-fast-leave {enable | disable}
        set mld-snooping-querier {enable | disable}
        set mld-snooping-querier-addr <IPv6_address>
        set mld-snooping-proxy {enable | disable}
    set policer <integer>
    set private-vlan {enable | disable}
        set isolated-vlan <integer>
        set community-vlans <vlan_map>
    set rspan-mode {enable | disable}
    config igmp-snooping-static-group
        edit <group_name>
            set mcast-addr <IPv4_address>
            set members <interface_name1> <interface_name2>...
        end
    config mld-snooping-static-group
        edit <group_name>
            set mcast-addr <IPv6_address>
            set members <interface_name1> <interface_name2>...
        end
    config member-by-mac
    config member-by-ipv4
    config member-by-ipv6
    config member-by-proto
    config dhcp-server-access-list
end

```

Variable	Description	Default
<vlan id>	Enter a VLAN identifier.	No default
access-vlan {enable   disable}	Set to <code>enable</code> to block FortiSwitch port-to-port traffic on this VLAN while allowing traffic to and from the FortiGate unit. Set to <code>disable</code> to allow normal VLAN traffic.	disable
cos-queue <0-7>	Specify which class of service (CoS) queue is used for traffic on this VLAN or use the <code>unset cos-queue</code> command to disable this setting.  This command is available only in in FortiLink mode.	No default
description <description_str>	Optionally, enter a description.  If the Tunnel-Private-Group-Id attribute on the RADIUS server was set to the VLAN name, set the description to the same string. For example: <code>set description "newvlan"</code>	No default
dhcp-snooping {enable   disable}	Enable or disable IPv4 DHCP snooping for this VLAN.	disable

Variable	Description	Default
dhcp-snooping-verify-mac {enable   disable}	Enable or disable whether to verify the source MAC address. This field is available only if <code>dhcp-snooping</code> is enabled.	disable
dhcp-snooping-option82 {enable   disable}	Enable or disable whether to insert option-82 fields. This field is available only if <code>dhcp-snooping</code> is enabled.	disable
arp-inspection {enable   disable}	Enable or disable dynamic ARP inspection.	disable
dhcp6-snooping {enable   disable}	Enable or disable IPv6 DHCP snooping for this VLAN.	disable
igmp-snooping {enable   disable}	Enable or disable IGMP snooping on the VLAN.	disable
igmp-snooping-fast-leave {enable   disable}	Enable or disable IGMP-snooping fast leave on this VLAN. This field is only available if <code>igmp-snooping</code> is enabled.	enable
igmp-snooping-querier {enable   disable}	Enable or disable whether periodic IGMP-snooping queries are sent to get IGMP reports. This field is only available if <code>igmp-snooping</code> is enabled.	disable
igmp-snooping-querier-addr <IPv4_address>	Optional. Enter the IPv4 address for the IGMP-snooping querier. This field is only available if <code>igmp-snooping</code> and <code>igmp-snooping-querier</code> are enabled.	0.0.0.0
igmp-snooping-querier-version {2 3}	Select whether to use the IGMP-snooping querier version 2 or version 3.	2
igmp-snooping proxy {enable   disable}	Enable or disable the IGMP-snooping proxy on this VLAN. When the IGMP-snooping proxy is enabled, this VLAN sends IGMP reports. This field is only available if <code>igmp-snooping</code> is enabled.	disable
lan-segment {enable   disable}	Enable or disable the use of LAN segments.	disable
lan-subvlans <VLAN_identifiers>	Enter the VLAN identifiers to assign to the LAN segment. You can enter single VLANs or ranges of VLANs, separated by commas without white space. For example: "1, 2-4, 5, 7, 9-100". The value must be less than 4,096 characters. This field is only available if <code>lan-segment</code> is enabled.	No default
learning {enable   disable}	Enable or disable layer-2 learning on this VLAN.	enable
learning-limit <integer>	Limit the number of dynamic MAC addresses on this VLAN. The per-VLAN MAC address learning limit is between 1 and 128. Set the value to 0 for no limit.	0
mld-snooping {enable   disable}	Enable or disable Multicast Listener Discovery (MLD) snooping for the this VLAN.	disable
mld-snooping-fast-leave {enable   disable}	Enable or disable MLD-snooping fast leave on this VLAN. This field is only available if <code>mld-snooping</code> is enabled.	enable

Variable	Description	Default
mld-snooping-querier {enable   disable}	Enable or disable whether periodic MLD-snooping queries are sent to get MLD reports. This field is only available if mld-snooping is enabled.	disable
mld-snooping-querier-addr <IPv6_address>	Optional. Enter the IPv6 address for the MLD-snooping querier. This field is only available if mld-snooping is enabled.	::
mld-snooping-proxy {enable   disable}	Enable or disable the MLD-snooping proxy on this VLAN. When the MLD-snooping proxy is enabled, this VLAN sends MLD reports. This field is only available if mld-snooping is enabled.	disable
policer <integer>	Set the policer for the traffic on this VLAN. This command is available only in FortiLink mode.	0
private-vlan {enable   disable}	Set to enable if this is a private VLAN.	disable
isolated-vlan <integer>	(Valid if private VLAN is enabled) Enter the isolated VLAN.	0
community-vlans <vlan_map>	(Valid if private VLAN is enabled) Enter the communities within this private VLAN. Enter single VLANs or ranges of VLANs separated by commas without white space. For example: 1,3-4,6,7,9-100	No default
rspan-mode {enable   disable}	Enable or disable port mirroring using the remote switch port analyzer (RSPAN) on this VLAN.	disable
<b>config igmp-snooping-static-group</b>		
<group_name>	Enter the IGMP static group name.	No default
mcast-addr <IPv4_address>	Enter the IPv4 multicast address for the IGMP static group.	0.0.0.0
members <interface_name1> <interface_name2>...	Enter the interfaces that belong to the IGMP static group.	No default
<b>config mld-snooping-static-group</b>		
<group_name>	Enter the MLD static group name.	No default
mcast-addr <IPv6_address>	Enter the IPv6 multicast address for the MLD static group.	No default
members <interface_name1> <interface_name2>...	Enter the interfaces that belong to the MLD static group.	No default

## config member-by

Use this command to assign VLANs based on specific fields in the packet (source MAC address, source IP address, or layer-2 protocol).

```
config switch vlan
  edit <vlan id>
    config member-by-mac
      edit <id>
        set mac XX:XX:XX:XX:XX:XX
        set description <128 byte string>
```

```

    next
end
config member-by-ipv4
    edit <id>
        set address a.b.c.d/e
        set description <128-byte string>
    next
end
config member-by-ipv6
    edit <id>
        set prefix xx:xx:xx:xx::/prefix
        set description <128-byte string>
    next
end
config member-by-proto
    edit <id>
        set frametypes {ethernet2 | 802.3d | llc}
        set protocol <6-digit hex value>
    next
end

```

Variable	Description	Default
<b>config member-by-mac</b>		
edit <id>	For a new entry, enter an unused ID.	No default
mac XX:XX:XX:XX:XX:XX	Enter a MAC address. If the source MAC address of an incoming packet matches this value, the associated VLAN will be assigned to the packet.	00:00:00:00:00:00
description	Enter up to 128 characters.	No default
<b>config member-by-ipv4</b>		
edit <id>	For a new entry, enter an unused ID.	No default
address a.b.c.d/e	Enter an IPv4 address and network mask. If the source IP address of an incoming packet matches this value, the associated VLAN will be assigned to the packet. The subnet mask must be a value in the range of 1-32.	0.0.0.0 0.0.0.0
description	Enter up to 128 characters.	No default
<b>config member-by-ipv6</b>		
edit <id>	For a new entry, enter an unused ID.	No default
prefix xx:xx:xx:xx::/prefix	Enter an IPv6 prefix. If the source IP address of an incoming packet matches this value, the associated VLAN will be assigned to the packet. The /prefix must in the range of 1-64.	::/0
description	Enter up to 128 characters.	No default
<b>config member-by-proto</b>		
edit <id>	For a new entry, enter an unused ID.	No default

Variable	Description	Default
frametypes {ethernet2   802.3d   llc}	Enter one or more Ethernet frame type. Set this value to llc for logical link control. Set this value to 802.3d for 802.3d and SNAP.	ethernet2 802.3d llc
protocol <6-digit hex value>	Enter an Ethernet protocol value If the frametype and Ethernet protocol value of an incoming packet matches these values, the associated VLAN will be assigned to the packet. The value range is 0-65535.	0x0000

## Example

The following example configures a VLAN:

```
config switch vlan
  edit 100
    config member-by-mac
      edit 1
        set description "pc2"
        set mac 00:21:cc:d2:76:72
      next
    end
  end
end
```

The following example configures the IGMP-snooping querier:

```
config switch vlan
  edit 100
    set igmp-snooping enable
    set igmp-snooping-querier enable
    set igmp-snooping-querier-addr 1.2.3.4
    set igmp-snooping-querier-version 3
  next
end
```

## config dhcp-server-access-list

Use this command to create a list of DHCP servers that DHCP snooping will include in the allowed server list. This list is used only if the `set dhcp-server-access-list` command has been enabled; see [config system global on page 189](#).

```
config switch vlan
  edit <vlan id>
    set dhcp-snooping enable
    set dhcp6-snooping enable
    config dhcp-server-access-list
      edit <string>
        set server-ip <xxx.xxx.xxx.xxx>
        set server-ip6 <xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx>
      next
    end
  next
end
```

Variable	Description	Default
edit <vlan id>	Enter a VLAN identifier.	No default
dhcp-snooping enable	Enable for IPv4 DHCP snooping. The <code>config dhcp-server-access-list</code> command is available only after DHCP snooping (IPv4 or IPv6) has been enabled for that VLAN.	disable
dhcp6-snooping enable	Enable for IPv6 DHCP snooping. The <code>config dhcp-server-access-list</code> command is available only after DHCP snooping (IPv4 or IPv6) has been enabled for that VLAN.	disable
edit <string>	Enter name of DHCP server access list	No default
server-ip <xxx.xxx.xxx.xxx>	If you enabled IPv4 DHCP snooping, enter Class A, B, or C IPv4 address for the DHCP server.	0.0.0.0
server-ip6 <xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx>	If you enabled IPv6 DHCP snooping, enter the IPv6 address for the DHCP server.	No default

## Example

The following example configures IPv4 DHCP snooping to include the specified DHCP server in the allowed server list:

```
config switch vlan
  edit 100
    set dhcp-snooping enable
    config dhcp-server-access-list
      edit "DHCPserver1"
        set server-ip 128.8.0.0
      next
    end
  next
end
```

The following example configures IPv6 DHCP snooping to include the specified DHCP server in the allowed server list:

```
config switch vlan
  edit 100
    set dhcp6-snooping enable
    config dhcp-server-access-list
      edit "DHCPserver1"
        set server-ip6 3f2e:6a8b:78a3:0d82:1725:6a2f:0370:6234
      next
    end
  next
end
```

## config switch vlan-tpid

Use this command to configure the VLAN TPID profile for VLAN stacking (QnQ). Each VLAN TPID profile contains one value for the EtherType field.

The FortiSwitch unit supports a maximum of four VLAN TPID profiles, including the default (0x8100). The default VLAN TPID profile (0x8100) cannot be deleted or changed.

To configure VLAN stacking and to select which VLAN TPID profile to use, see [config switch interface on page 104](#).

## Syntax

```
config switch vlan-tpid
  edit <VLAN_TPID_profile_name>
    set ether-type <0x0001-0xfffe>
  next
end
```

Variable	Description	Default
<VLAN_TPID_profile_name>	Enter a name for the VLAN TPID profile name.	No default
ether-type <0x0001-0xfffe>	Enter a hexadecimal value for the EtherType field.	0x8100

## config switch-controller global

Use this command to configure system-wide switch options in FortiLink mode.

## Syntax

```
config switch-controller global
  set ac-data-port <1024-49150>
  set ac-dhcp-option-code <integer>
  set ac-discovery-mc-addr <Class-D IPv4 address>
  set ac-discovery-type {broadcast | dhcp | multicast | static}
  set ac-port <1024-49150>
  set echo-interval <1-600>
  set location <string>
  set name <string>
  set max-discoveries <0-64>
  set max-retransmit <0-64>
  config ac-list
    edit <id>
      set ipv4-address <IPv4_address>
    next
  end
end
```

Variable	Description	Default
ac-data-port <1024-49150>	Set the switch-controller control port. Valid values are 1024-49150.	15250
ac-dhcp-option-code <integer>	Set the DHCP option code for CAPUTP AC.	138
ac-discovery-mc-addr <Class-D IPv4 address>	Set the discovery multicast address.	224.0.1.140



Variable	Description	Default
ac-discovery-type {broadcast   dhcp   multicast   static}	Select the AC discovery type: broadcast discovery, DHCP discovery, multicast discovery, or static configuration.	broadcast
ac-port <1024-49150>	Set the switch-controller control port.	5246
echo-interval <1-600>	Set the number of seconds before SWTP sends an echo request after joining AC.	30
location <string>	Enter the location.	No default
name <string>	Enter a name for the configuration.	No default
max-discoveries <0-64>	Set the maximum number of discovery request messages for every round.	3
max-retransmit <0-64>	Set the maximum number of retransmissions for the tunnel packet.	6
ac-list	Create a list of IPv4 addresses for AC static discovery.  This command is only available when the <code>ac-discovery-type</code> is set to <code>static</code> .	No default.
<id>	Enter a unique integer to create a new entry.	No default.
ipv4-address <IPv4_address>	Enter a Class A, B, or C IPv4 address in the following format: xxx.xxx.xxx.xxx	No default.

## Example

The following example configures static discovery to find the IP address of the FortiGate unit (switch controller) that manages the FortiSwitch unit:

```
config switch-controller global
    set ac-discovery-type static
    config ac-list
        edit 1
            set ipv4-address <IPv4_address>
        next
    end
end
```

## config system

Use the `config system` commands to configure options related to the overall operation of the FortiSwitch unit:

- [config system accprofile](#) on page 162
- [config system admin](#) on page 163
- [config system alias command](#) on page 166
- [config system alias group](#) on page 171
- [config system arp-table](#) on page 172
- [config system bluetooth](#) on page 172

- [config system bug-report on page 173](#)
- [config system certificate ca on page 173](#)
- [config system certificate crl on page 174](#)
- [config system certificate local on page 175](#)
- [config system certificate ocsf on page 176](#)
- [config system certificate remote on page 177](#)
- [config system console on page 177](#)
- [config system dhcp server on page 178](#)
- [config system dns on page 184](#)
- [config system fips-cc on page 185](#)
- [config system flow-export on page 186](#)
- [config system flan-cloud on page 189](#)
- [config system global on page 189](#)
- [config system interface on page 196](#)
- [config system ipv6-neighbor-cache on page 206](#)
- [config system link-monitor on page 207](#)
- [config system location on page 208](#)
- [config system ntp on page 212](#)
- [config system password-policy on page 213](#)
- [config system schedule group on page 215](#)
- [config system schedule onetime on page 215](#)
- [config system schedule recurring on page 216](#)
- [config system settings on page 217](#)
- [config system sflow on page 218](#)
- [config system sniffer-profile on page 218](#)
- [config system snmp community on page 219](#)
- [config system snmp sysinfo on page 222](#)
- [config system snmp user on page 223](#)
- [config system web on page 225](#)

## config system accprofile

Use this command to add access profiles that control administrator access to FortiSwitch features. Each FortiSwitch administrator account must include an access profile. You can create access profiles that deny access, allow read only, or allow both read and write access to FortiSwitch features.

### Syntax

```
config system accprofile
edit <profile-name>
    set admingrp {none | read | read-write}
    set alias-commands {all | <list>}
    set exec-alias-grp {none | read | read-write}
    set loggrp {none | read | read-write}
    set netgrp {none | read | read-write}
    set routegrp {none | read | read-write}
    set sysgrp {none | read | read-write}
```

end

Variable	Description	Default
<profile-name>	Enter the name for the profile.	No default
admingrp {none   read   read-write}	Set the access permission for admingrp.	none
alias-commands {all   <list>}	Specify the aliases and alias groups to include in the access profile or specify <code>all</code> . The aliases and alias groups specified for this access profile control which commands an administrator can run using the <code>execute alias</code> commands. Use a space to separate multiple items.	No default
exec-alias-grp {none   read   read-write}	Specify one of the following options: <ul style="list-style-type: none"> <li>Select <code>none</code> to prevent access to the <code>execute alias</code> configure commands.</li> <li>Select <code>read</code> to provide access to the <code>execute alias</code> configure {<code>get</code>   <code>show</code>   <code>show-full-configuration</code>} command.</li> <li>Select <code>read-write</code> to provide access to the <code>execute alias</code> configure {<code>get</code>   <code>show</code>   <code>show-full-configuration</code>   <code>set</code>   <code>unset</code>} and <code>execute alias</code> script commands.</li> </ul>	none
loggrp {none   read   read-write}	Set the access permission for loggrp.	none
netgrp {none   read   read-write}	Set the access permission for netgrp.	none
routegrp {none   read   read-write}	Set the access permission for routegrp.	none
sysgrp {none   read   read-write}	Set the access permission for sysgrp.	none

## Example

This example shows how to configure an access profile with just read-only permission:

```
config system accprofile
edit profile1
set admingrp read
set loggrp read
set netgrp read
set routegrp read
set sysgrp read
end
```

## config system admin

Use the default admin account or an account with system configuration read and write privileges to add new administrator accounts and control their permission levels. Each administrator account except the default admin must include an access profile. You cannot delete the default super admin account or change the access profile (`super_admin`). In addition, there is also an access profile that allows read-only super admin privileges, `super_admin_readonly`.

The `super_admin_readonly` profile cannot be deleted or changed, similar to the `super_admin` profile. This read-only super-admin may be used in a situation where it is necessary to troubleshoot a customer configuration without making changes.

You can authenticate administrators using a password stored on the FortiSwitch unit or you can use a RADIUS server to perform authentication. When you use RADIUS authentication, you can authenticate specific administrators or you can allow any account on the RADIUS server to access the FortiSwitch unit as an administrator.

## Syntax

```
config system admin
  edit <admin_name>
    set accprofile <profile-name>
    set accprofile-override {enable | disable}
    set allow-remove-admin-session {enable | disable}
    set comments <comments_string>
    set gui-detail-panel-location {bottom | ide | side}
    set {ip6-trusthost1 | ip6-trusthost2 | ip6-trusthost3 |
ip6-trusthost4 | ip6-tru sthost5 | ip6-trusthost6 |
ip6-trusthost7 | ip6-trusthost8 | ip6-trusthost9 |
ip6-trusthost10} <address_ipv6mask>
    set password <admin_password>
    set peer-auth {disable | enable}
      set peer-group <peer-grp>
    set remote-auth {enable | disable}
      set remote-group <name>
      set wildcard {enable | disable}
    set schedule <schedule-name>
    set ssh-public-key1 "<key-type> <key-value>"
    set ssh-public-key2 "<key-type> <key-value>"
    set ssh-public-key3 "<key-type> <key-value>"
    set {trusthost1 | trusthost2 | trusthost3 | trusthost4 |
trusthost5 | trusthost6 | trusthost7 | trusthost8 | trusthost9
| trusthost10} <address_ipv4mask>
  end
end
```

Variable	Description	Default
<admin_name>	Enter the name for the admin account.	No default
accprofile <profile-name>	Enter the name of the access profile to assign to this administrator account. Access profiles control administrator access to FortiSwitch features.	No default
accprofile-override {enable   disable}	Enable or disable whether the remote authentication server can override the access profile.	disable
allow-remove-admin-session {enable   disable}	Allow admin session to be removed by privileged admin users	disable

Variable	Description	Default
comments <comments_string>	Enter the last name, first name, email address, phone number, mobile phone number, and pager number for this administrator. Separate each attribute with a comma, and enclose the string in double-quotes. The total length of the string can be up to 128 characters. (Optional)	No default
gui-detail-panel-location {bottom   hide   side}	Choose the position of the log detail window.	bottom
{ip6-trusthost1   ip6-trusthost2   ip6-trusthost3   ip6-trusthost4   ip6-trusthost5   ip6-trusthost6   ip6-trusthost7   ip6-trusthost8   ip6-trusthost9   ip6-trusthost10} <address_ipv6mask>	Any IPv6 address and netmask from which the administrator can connect to the FortiSwitch unit.  If you want the administrator to be able to access the system from any address, set the trusted hosts to ::/0.	::/0
password <admin_password>	Enter the password for this administrator. It can be up to 256 characters in length.  If you want to include the “?” character as part of the password: 1. Press Ctrl+v. 2. Type the “?” character .	No default
peer-auth {disable   enable}	Set to enable peer certificate authentication (for HTTPS admin access).	disable
peer-group <peer-grp>	Name of peer group defined under <code>config user peergrp</code> or user group defined under <code>config user group</code> . Used for peer certificate authentication (for HTTPS admin access). This option is available only when <code>peer-auth</code> has been enabled.	No default
remote-auth {enable   disable}	Enable or disable authentication of this administrator using a remote RADIUS, LDAP, or TACACS+ server.	disable
remote-group <name>	Enter the administrator user group name, if you are using RADIUS, LDAP, or TACACS+ authentication.  This is available only when <code>remote-auth</code> is enabled.	No default
wildcard {enable   disable}	Enable or disable wildcard RADIUS authentication. This option is available only when <code>remote-auth</code> is enabled.	disable
schedule <schedule-name>	Restrict times that an administrator can log in. Defined in <code>config firewall schedule</code> . No default indicates that the administrator can log in at any time.	No default

Variable	Description	Default
ssh-public-key1 "<key-type> <key-value>"	You can specify the public keys of up to three SSH clients. These clients are authenticated without being asked for the administrator password. You must create the public-private key pair in the SSH client application.  <key type> is <code>ssh-dss</code> for a DSA key or <code>ssh-rsa</code> for an RSA key.  <key-value> is the public key string of the SSH client.	No default
ssh-public-key2 "<key-type> <key-value>"		No default
ssh-public-key3 "<key-type> <key-value>"		No default
{trusthost1   trusthost2   trusthost3   trusthost4   trusthost5   trusthost6   trusthost7   trusthost8   trusthost9   trusthost10} <address_ipv4mask>	Any IPv4 address or subnet address and netmask from which the administrator can connect to the system.  If you want the administrator to be able to access the system from any address, set the trusted hosts to 0.0.0.0 and the netmask to 0.0.0.0.	0.0.0.0 0.0.0.0

## Example

The following example creates a RADIUS system admin group:

```
config system admin
  edit "RADIUS_Admins"
    set remote-auth enable
    set accprofile "super_admin"
    set wildcard enable
    set remote-group "RADIUS_Admins"
  next
end
```

## config system alias command

Use this command to grant an administrator access to individual configuration attributes, table entries, or CLI commands. You can also use this command to create a script to run multiple commands. Scripts are a simpler way to manage a large number of commands.

### Notes:

- Configuration-type aliases cannot create or delete table entries. For example, under the `config switch interface` command, you cannot create a new interface name with the `edit <interface_name>` command.
- The `super_admin` administrator profile has access to all command aliases.

## Syntax

```
config system alias command
  edit <alias_name or script_name>
    set description <string>
    set type {configuration | script}
    set path <path>
    set attribute <attribute-name>
    set permission {read | read-write}
```

```

set table-listing {allow | deny}
set limit-shown-attributes {disable | enable}
set read-only-attributes <attribute-name>
set table-ids-allowed <table-ID-value>
set command <string>
set table-entry-create {allow | deny}
config script-arguments
    edit <argument_ID>
        set type {integer | string | table-id}
        set name <string>
        set help <string>
        set optional {enable | disable}
        set range {enable | disable}
        set range-delay <0-172800>
        set allowed-values <string>
    next
end
next
end

```

Variable	Description	Default
<alias_name or script_name>	<p>If the type will be configuration, enter an alias name for the command in this configuration. If the type will be script, enter a script name.</p> <p>The alias or script name cannot be all or match an alias group name.</p>	No default
description <string>	<p>If the type will be configuration, enter a description of the command or a help message. It can be up to 80-characters long. The description is displayed with the alias name when you enter <code>execute alias configure {get   show   show-full-configuration   set   unset} ?</code>.</p> <p>If the type will be script, enter a description of the script. It can be up to 80-characters long. The description is displayed with the script name when you enter <code>execute alias script ?</code>.</p>	No default
type {configuration   script}	<p>The configuration type provides configuration-specific functionality to control <code>get</code>, <code>show</code>, <code>show-full-configuration</code>, <code>set</code>, and <code>unset</code> commands. You can also use the configuration type to limit accessible table entries and limit displayed attributes.</p> <p>The script type allows the administrator to create a list of CLI commands to run.</p>	configuration
path <path>	Required. Enter the period-separated path to the CLI command.	No default

Variable	Description	Default
	For example, enter <code>set path switch.lldp.profile</code> to apply the configuration to the <code>config switch lldp profile</code> command. Enter <code>set path system.interface</code> to apply the configuration to the <code>config system interface</code> command. You can specify only top-level objects, such as <code>system.interface</code> , <code>router.bgp</code> , or <code>system.snmp.settings</code> . If you specify child objects or child tables (such as <code>system.interface.ipv6</code> , <code>router.bgp.neighbor</code> , or <code>switch.lldp.profile.custom-tlv</code> ), FortiSwitch returns an error.	
attribute <attribute-name>	Required. Enter the attribute that can be retrieved or modified. Enter <code>set attribute ?</code> to see the list of valid attributes. If you enter an invalid value, FortiSwitchOS returns an error. This option is available only when <code>path</code> has been set.	No default
permission {read   read-write}	Select <code>read</code> to allow this alias to be used by the <code>execute alias configure {get   show   show-full-configuration}</code> command. Select <code>read-write</code> to allow this alias to be used by the <code>execute alias configure {get   show   show-full-configuration   set   unset}</code> command.	read
table-listing {allow   deny}	Allow or prevent the listing of all entries by the <code>execute alias configure {get   show   show-full-configuration}</code> command commands. <ul style="list-style-type: none"> <li>Select <code>allow</code> to permit all entries to be listed.</li> <li>Select <code>deny</code> to prevent the entries from being listed except for the entries specified in the <code>table-ids-allowed</code> setting. If <code>table-ids-allowed</code> is empty, a valid entry must be provided for listing.</li> </ul> This option is available only when <code>path</code> has been set.	deny
limit-shown-attributes {disable   enable}	Enable or disable whether to limit the attributes displayed with the <code>show</code> and <code>get</code> commands. Selecting <code>disable</code> displays all attributes for the <code>show</code> and <code>get</code> commands. Selecting <code>enable</code> displays only the attributes listed in <code>attributes</code> and <code>read-only-attributes</code> .	enable
read-only-attributes <attribute-name>	When <code>limit-shown-attributes</code> is enabled, you can enter additional attributes to display with the <code>show</code> and <code>get</code> commands. When you enter <code>read-only-attributes ?</code> to see a list of valid attributes, more attributes are available than when you enter <code>set attribute ?</code> . Read-only attributes can include child tables, child objects, and get-only attributes. You can list up to 31 attributes.	No default



Variable	Description	Default
table-ids-allowed <table-ID-value>	<p>Specify which entries can be accepted by the <code>execute alias configure {get   show   show-full-configuration   set   unset}</code> command.</p> <p>Enter <code>set table-ids-allowed ?</code> to see a list of valid entries. You can specify entries that do not currently exist; they can be created later.</p> <p>If <code>table-listing</code> is set to <code>deny</code>, the <code>table-ids-allowed</code> entries are displayed when the user runs the <code>execute alias configure {get   show   show-full-configuration}</code> command without specifying any entry.</p> <p>This option is available only when <code>path</code> has been set.</p>	No default
command <string>	<p>Enter the script command (within quotation marks) to be run. You can use the Enter key to separate command lines. Enter <code>set command ?</code> for formatting details.</p> <p>This option is available only when <code>type</code> has been set to <code>script</code>.</p>	No default
table-entry-create {allow   deny}	<p>Allow or deny the creation of new table (or sub-table) entries.</p> <p>This option is available only when <code>type</code> has been set to <code>script</code>. When <code>type</code> has been set to <code>configuration</code>, you cannot create any new table entries.</p>	deny
<b>config script-arguments</b>		
<argument_ID>	Enter an identifier for the argument. The identifier must match the identifier used in the script.	No default
type {integer   string   table-id}	Enter the data type that the argument accepts.	string
name <string>	Enter the display name for the argument. You can use uppercase and lowercase letters, numbers, and hyphens. The display name is shown when the user runs the <code>execute alias script</code> command.	No default
help <string>	Enter a help message for the argument. You can use uppercase and lowercase letters, numbers, slashes, parentheses, brackets, commas, underscores, and hyphens. The help message is displayed when the user runs the <code>execute alias script</code> command.	No default
optional {enable   disable}	Enable this option to allow the user to omit entering a value for this argument. Disable this option to force the user to specify a value for this argument.	disable
range {enable   disable}	Enable this option to allow a range of integers, a range of table identifiers, or a comma-separated list of strings. Disable this option to allow only a single value for this argument.	disable
range-delay <0-172800>	Enter the number of seconds to delay between values when executing.	0

Variable	Description	Default
	This option is available only when <code>range</code> has been set to <code>enable</code> .	
<code>allowed-values &lt;string&gt;</code>	Enter the values allowed for this argument. <ul style="list-style-type: none"> <li>If <code>type</code> is set to <code>string</code>, separate values with a space. For example: <code>set allowed-values port1 port3 port7</code></li> <li>If <code>type</code> is set to <code>integer</code>, you can use ranges and comma-separated values, such as "1-10" or "1-10,3,11,55".</li> <li>If <code>type</code> is set to <code>table-id</code> and the table identifiers are integers, you can use both ranges and comma-separated values, such as "1-10" or "1-10,3,11,55".</li> </ul>	No default

## Examples

The following example creates two aliases for the `config switch physical-port` command.

- The `port-description` alias allows an administrator to change the `set description` value; when running a `get` or `show` command, the administrator will see only the description configuration.
- The `port-status` alias allows an administrator to change the `set status` value; the administrator will see both the description and port status configuration when running `get` or `show` commands.

```
config system alias command
edit "port-status"
    set description "View or change the port status."
    set type configuration
    set path "switch.physical-port"
    set attribute "status"
    set permission read-write
    set limit-shown-attributes enable
    set read-only-attributes "description"
next
edit "port-description"
    set description "View or change the port description."
    set type configuration
    set path "switch.physical-port"
    set attribute "description"
    set permission read-write
    set limit-shown-attributes enable
next
end
```

The following example creates two scripts. Both scripts list the switch mac-address table.

- The `mac-list` script is more flexible because it requires that the user specify the VLANs to list the MAC addresses from.
- The `list-mac-by-port-and-vlan-customer-AAA` script is more controlled because it allows the user to see the MAC addresses learned on the specified VLANs.

```
config system alias command
edit "list-mac-by-port-and-vlan-customer-AAA"
    set description "List MAC addresses on your VLANs and ports."
```

```

        set type script
        set command "diag switch mac-address filter clear
diag switch mac-address filter port-id-map 3-8
diag switch mac-address filter vlan-map 1000-1010
diag switch mac-address list
diag switch mac-address filter clear"
    next
    edit "mac-list"
        set description "List MAC addresses learned on the provided VLANs"
        set type script
        set command "diag switch mac-address filter clear
diag switch mac-address filter vlan-map $1
diag switch mac-address list | grep -i mac
diag switch mac-address filter clear"
        config script-arguments
            edit 1
                set name "VLAN-ID-map"
                set help "List of VLANs to check"
            next
        end
    next
end

```

## config system alias group

Use this command to specify alias groups to bundle different alias commands together for easy assignment.

### Syntax

```

config system alias group
    edit <alias_group_name>
        set description <string>
        set commands <alias_command_list>
    end

```

Variable	Description	Default
<alias_group_name>	Enter a name for the alias group. The name cannot be <code>all</code> or match an alias name.	No default
description <string>	Enter a description of the command alias group. It can be up to 80-characters long.	No default
commands <alias_command_name>	Enter a list of command aliases. Use a space to separate them.	No default

### Example

This example shows how to create a group of two command aliases:

```

config system alias group
    edit aliasgroup1
        set description "Alias group for config switch physical-port."
        set commands port-status port-description
    end

```

## config system arp-table

Use this command to manually add ARP table entries to the FortiSwitch unit. ARP table entries consist of a interface name, an IP address, and a MAC address.

### Syntax

```
config system arp-table
  edit <table_value>
    set interface {<string> | internal | mgmt}
    set ip <address_ipv4>
    set mac <mac_address>
  end
```

Variable	Description	Default
<table_value>	Enter the identification number for the table.	No default
interface {<string>   internal   mgmt}	Enter the interface to associate with this ARP entry	No default
ip <address_ipv4>	Enter the IP address of the ARP entry.	0.0.0.0
mac <mac_address>	Enter the MAC address of the device entered in the table, in the form of xx:xx:xx:xx:xx:xx.	00:00:00:00:00:00

### Example

This example shows how to add an entry to an ARP table:

```
config system arp-table
  edit 1
    set interface internal
    set ip 172.168.20.1
    set mac 00:21:cc:d2:76:72
  end
```

## config system bluetooth

Use this command to configure Bluetooth.

### Syntax

```
config system bluetooth
  set pin <string>
  set status {disable | enable}
end
```

Variable	Description	Default
pin <string>	Enter the Bluetooth pair personal identification number (PIN).	1234
status {disable   enable}	Enable or disable support for Bluetooth.	disable

## config system bug-report

Use this command to configure a custom email relay for sending problem reports to Fortinet customer support.

### Syntax

```
config system bug-report
  set auth {no | yes}
  set mailto <email_address>
  set password <password>
  set server <servername>
  set username <name>
  set username-smtp <account_name>
end
```

Variable	Description	Default
auth {no   yes}	Enter <b>yes</b> if the SMTP server requires authentication or <b>no</b> if it does not.	no
mailto <email_address>	The email address for bug reports.	fortiswitch@fortinet.com
password <password>	If the SMTP server requires authentication, enter the required password.	No default
server <servername>	The SMTP server to use for sending bug report email.	fortinet.com
username <name>	A valid user name on the specified SMTP server.	bug_report
username-smtp <account_name>	A valid user name for authentication on the specified SMTP server.	bug_report

### Example

This example shows how to configure a custom email relay:

```
config system bug-report
  set auth yes
  set mailto techdocs@fortinet.com
  set password 123abc
  set server fortinet.com
  set username techdocs
  set username-smtp techdocs
end
```

## config system certificate ca

Use this command to configure CA certificates.

FortiSwitch includes a reserved entry named `Fortinet_CA`. You cannot modify this entry.

### Syntax

```
config system certificate ca
  edit <name>
```

```

    set ca <certificate>
    set scep-url <string>
next
end

```

Variable	Description	Default
name	Enter the name of the certificate.	No default
certificate	PEM format CA certificate. Paste the contents of a CA certificate file between quotation marks as shown in the example.	No default
set scep-url	Full URL (such as http://www.test.com)	No default

### Example

```

# config system certificate ca
# get
== [ Fortinet_CA ]
== [ OracleSSLCA ]
== [ ca ]
FortiCore-VM # config system certificate ca
FortiCore-VM (ca) # edit ca-new
FortiCore-VM (ca-new) # set certificate "-----BEGIN CERTIFICATE-----
> MIID0TCCArmGAWIBAgIJAKr1/WtE48FeMA0GCSqGSIb3DQEBCwUAMGgxExARBgoJ
> kiaJk/IsZAEZFgNvcmcxFzAVBgoJkiaJk/IsZAEZFgdjaWxvZ29uMQswCQYDVQQG
> EwJVUzEQMA4GA1UEChMHQ01Mb2dvbjEZMBcGA1UEAxMQQ01Mb2dvbiBPU0cgQ0Eg
> MTAeFw0xNDA0MzAxNDE4MDhaFw0xNDA0MzAxNDE4MDhaMGgxExARBgoJkiaJk/Is
> ZAEZFgNvcmcxFzAVBgoJkiaJk/IsZAEZFgdjaWxvZ29uMQswCQYDVQQGEwJVUzEQ
> MA4GA1UEChMHQ01Mb2dvbjEZMBcGA1UEAxMQQ01Mb2dvbiBPU0cgQ0EgMTCCASIw
> DQYJKoZIhvcNAQEBBQADggEPADCCAQoCgggEBAMQQzSB9Uc37VuIyt5xJxcYYkc6K
> XpYihHgskTQp6YYB4XHVimouHafMYyoFsnenrcgf2NGFDvi9l9x9mnL77920JqGr
> LijieMiFEyPlnhGW8C6nJjkSsXLbgZNh9u6U+0oAbspsFRwdHDZOI7gIHSJ2zuiY
> CkMAvjw9TN44Q4IFCvSIf7mfzZgBH7AW1sbgzngnAJsWQhQGTpxZAxubItesyduD
> vj8tz9eb5u8JO3iQ/LYhMspNnxcptFdaLn2v82NAFTtCrZdCd7aLj1DM0DPEX7Nw
> V/rt/1+tlscglYyEoUnlPYuSQN0Q6Aj5i1GcKPvnFS0Oy9lGY1lT1vZJ4F0CAwEA
> AaN+MHwwDwYDVR0TAQH/BAUwAwEB/zAOBgNVHQ8BAf8EBAMCAQYwHQYDVR0OBBYE
> FP7bnvI4TIqtrM+KGgCvedJiQpuHMB8GA1UdIwQYMBaAFP7bnvI4TIqtrM+KGgCv
> FP7bnvI4TIqtrM+KGgCvedJiQpuHMB8GA1UdIwQYMBaAFP7bnvI4TIqtrM+KGgCv
> edJiQpuHMBkGA1UdEQQSMBCBDMNhQGNpbG9nb24ub3JnMA0GCSqGSIb3DQEBCwUA
> A4IBAQCq5KUHQNg51uh1pxKMXQ98Adj2bNzQbswdAFs1Pow8tTZIBMwhdrq02ZHC
> XPyp2IHxfv+G+pMV1JFtdR0fy8ivilMNYjObEGh1Ss3kvvU7dlz3XwPxqpNcwDqs
> 1K6RRg4zpnWCFPCliAkPDsDban1B6A6zJXqOpGgzwocU3dZbPe5sYLgkWZO2/8MI
> eAEk7zoU1ZPSZiu5HghPafKuE1HYshvsak090tRgC6VLvaSLonZlwr0GuFVGdewH
> 4jr1HpenH7QiLCB1NGCoJgDi3qiFosw3M2+0ExevElafj2Usm4oZir+Uty0rvR8D
> 03RHH8yYbZ9rw0kuwTkJEo3bYDXH
> -----END CERTIFICATE-----"

```

### config system certificate crl

Use this command to configure the certificate revocation list.

## Syntax

```
config system certificate crl
edit <name>
    set crl <crl>
    set http-url <string>
    set ldap-server <LDAP>
    set scep-cert <certificate>
    set scep-url <string>
end
```

Variable	Description	Default
name	Name of the certificate revocation list	No default
crl	PEM format CRL. Paste the contents of a CRL file between quotation marks.	No default
http-url	URL of HTTP server for CRL update	No default
ldap-server	LDAP server	No default
scep-cert	Local certificate used for CRL update using SCEP	Fortinet_Factory
scep-url	URL of CA server for CRL update using SCEP	No default

## config system certificate local

Use this command to manage local certificates. FortiSwitch includes a reserved entry named "Factory". You cannot modify this entry.

## Syntax

```
config system certificate local
edit <name>
    set comments <string>
    set password <passwd>
    set private-key <key>
    set scep-url <string>
next
end
```

Variable	Description	Default
name	Enter the name of the certificate.	No default
comments	Optional administrator note.	No default
password	Password that was used to encrypt the file. The FortiCore system uses the password to decrypt and install the certificate.	*
private-key	Paste the contents of a key file between quotation marks as shown in the example.	No default
scep-url	URL of SCEP server	No default

## Example

```
# config system certificate local
# get
== [ Factory ]
== [ csr_name_test ]

# show
config system certificate local
edit "csr_name_test"
t7e4fiX6Sd6T5426Gg/HQXRH41mBwGmjKdBSHUbVUZTka2FtD1oLMWE2mTq1c9GMUz0DokPfoqxxkjkmja5mWv4/w
A5XdQ00lQmTeMZK/X5OSFmSS
set private-key "-----BEGIN ENCRYPTED PRIVATE KEY-----
MIIBnjBABgkqhkiG9w0BBQ0wMzAbBgkqhkiG9w0BBQwwDgQI5/vf1VQB/28CAgga
MBQGCCqGSib3DQMHBAGZorM0zlnPNASCAViZk4wTZYYMP10e7NwyxqvLND3LxUaV
UG1XpUSPfnUP4YgrV2d0Uijclj5M7MS341cMVkZ7G1pS/6jvxUr0NamQv4j7JsJ0
t3G7LMkzcTiep26GUCy55Qt+iob7lh0iiKa+4uPOq/Mzy+84AWnRNLfIhevHPsYb
rk4UbwnOFb0ZD9i06+UrFlsRGmtp/vlDyBgAoBojKxB/4j0G299QamnzPz4qneBc
HtPqTMPElyqtT6w4cmnwp6Ti200Ar9c44mKdyAVZKie+Iu/4pSVBNSfuC+jjtmC
k8OrCrG14NwrhbTY9zEnGxBRR1NMTEBBTqAQNYWtjUEQVjmY1GAJA3/oBQe7l8C/
G/IUVvc/aaqMvsKSNfDpgZaudTDe1Wxi1792ADGH7zsls+ykH9nmqh7BPfm30Nv
f80lhXgq0lLvo4v1xdC0w5oAeCyGlbTY5ZnXJFm0HCp0kA==
-----END ENCRYPTED PRIVATE KEY-----
"

set csr "-----BEGIN CERTIFICATE REQUEST-----
MIIBNzCB4gIBADBQMqswCQYDVQQIEWJjYTESMBAGA1UEBxMjc3Vubnl2YWxlMREw
DwYDVQQKEwhmb3J0aW5ldDENMASGA1UECxEZmFkYzEQMA4GA1UEAxMHZXhhbXBs
ZTETMBEGCSqGSib3DQEJARYEc9vdDBcMA0GCSqGSib3DQEBAQUAA0sAMEgCQQDK
XH/MC1KTkkZJiQDFb6IXHLYsSVbJzF0K30s3CVmKZvJQSBnmV8aq3fJjN28lrrFT
iUovVdBzwCF5jKbxsrPLAgMBAAGGEzARBgNVHRMxChMIQ0E6RkFMU0UwDQYJKoZI
hvcNAQEFBQADQQB96NU+xjds83/6VRSzsyxeVxAGVD7F9Npuji8r/MpxPiMT0PQM
G8Wg//26ZqpWjuPq2V1+7QU4MDk3B5VUJSEF
-----END CERTIFICATE REQUEST-----
"
```

## config system certificate ocsf

Use this command to configure the OCSP server certificate.

### Syntax

```
config system certificate ocsf
  set cert {<string> | Entrust_802.1x_CA | Entrust_802.1x_G2_CA | Entrust_802.1x_L1K_CA |
    Fortinet_CA | Fortinet_CA2}
  set unavail-action {ignore | revoke}
  set url <string>
end
```



Variable	Description	Default
cert {<string>   Entrust_802.1x_CA   Entrust_802.1x_G2_CA   Entrust_802.1x_L1K_CA   Fortinet_CA   Fortinet_CA2}	Enter the name of the certificate or select one of the listed certificates.	No default
unavail-action {ignore   revoke}	Set if the FortiSwitch should ignore the OCSP check or revoke the certificate if the server is unavailable.	revoke
url <string>	Enter the URL for the OCSP server.	No default

## Example

This example shows how to configure the OCSP server certificate:

```
config system certificate ocs
  set cert Fortinet_CA
  set unavail-action ignore
  set url https://www.fortinet.com
end
```

## config system certificate remote

Use this command to install remote certificates. The remote certificates are public certificates without a private key.

```
config system certificate remote
  edit <name>
    set remote "<cert>"
  end
```

Variable	Description	Default
name	Name for the certificate	No default
remote "<cert>"	PEM-format certificate	No default

## config system console

Use this command to set the console command mode, the number of lines displayed by the console, and the baud rate.

### Syntax

```
config system console
  set baudrate <speed>
  set mode {batch | line}
  set output {standard | more}
end
```

Variable	Description	Default
baudrate <speed>	Set the console port baudrate. Select one of 9600, 19200, 38400, 57600, or 115200.	115200
mode {batch   line}	Set the console mode to line or batch. Used for autotesting only.	line
output {standard   more}	Set console output to standard (no pause) or more (pause after each screen is full and resume when a key is pressed). This setting applies to <code>show</code> or <code>get</code> commands only.	more

## Example

This example shows how to configure the console:

```
config system console
  set baudrate 57600
  set mode batch
  set output standard
end
```

## config system dhcp server

Use this command to configure DHCP servers.

### Syntax

```
config system dhcp server
  edit <id>
    set auto-configuration {enable | disable}
    set conflicted-ip-timeout <integer>
    set default-gateway <xxx.xxx.xxx.xxx>
    set dns-server1 <xxx.xxx.xxx.xxx>
    set dns-server2 <xxx.xxx.xxx.xxx>
    set dns-server3 <xxx.xxx.xxx.xxx>
    set dns-service {default | local | specify}
    set domain <string>
    set filename <string>
    set interface <string>
    set lease-time <integer>
    set netmask <xxx.xxx.xxx.xxx>
    set next-server <xxx.xxx.xxx.xxx>
    set ntp-server1 <xxx.xxx.xxx.xxx>
    set ntp-server2 <xxx.xxx.xxx.xxx>
    set ntp-server3 <xxx.xxx.xxx.xxx>
    set ntp-service {default | local | specify}
    set status {enable | disable}
    set tftp-server <xxx.xxx.xxx.xxx>
    set timezone <00-75>
    set timezone-option {default | disable | specify}
    set vci-match {enable | disable}
    set vci-string <VCI_strings>
    set wifi-acl <xxx.xxx.xxx.xxx>
```

```

set wifi-ac2 <xxx.xxx.xxx.xxx>
set wifi-ac3 <xxx.xxx.xxx.xxx>
set wins-server1 <xxx.xxx.xxx.xxx>
set wins-server2 <xxx.xxx.xxx.xxx>
config exclude-range
    edit <id>
        set end-ip <xxx.xxx.xxx.xxx>
        set start-ip <xxx.xxx.xxx.xxx>
    next
end
config ip-range
    edit <id>
        set end-ip <xxx.xxx.xxx.xxx>
        set start-ip <xxx.xxx.xxx.xxx>
    next
end
config options
    edit <id>
        set code <integer>
        set ip <IP_addresses>
        set type {fqdn | hex | ip | string}
        set value <string>
    next
end
config reserved-address
    edit <id>
        set action {assign | block | reserved}
        set circuit-id {<string> | <hex>}
        set circuit-id-type {hex | string}
        set description <string>
        set ip <xxx.xxx.xxx.xxx>
        set mac <xx:xx:xx:xx:xx:xx>
        set remote-id {<string> | <hex>}
        set remote-id-type {hex | string}
        set type {mac | option82}
    next
end
next
end

```

Variable	Description	Default
<id>	Enter the identifier.	No default
auto-configuration {enable   disable}	Enable or disable automatic configuration. Auto configuration allows the DHCP server to dynamically assign IP addresses to hosts on the network connected to the interface	enable
conflicted-ip-timeout <integer>	Enter the number of seconds before a conflicted IP address is removed from the DHCP range and is available to be reused. The range is 60-8640000 seconds.	1800

Variable	Description	Default
default-gateway <xxx.xxx.xxx.xxx>	Enter the IP address of the default gateway that the DHCP server assigns to DHCP clients.	0.0.0.0
dns-server1 <xxx.xxx.xxx.xxx>	Enter the IPv4 address for the DNS server 1. This option is only available when <code>dns-service</code> is set to <code>specify</code> .	0.0.0.0
dns-server2 <xxx.xxx.xxx.xxx>	Enter the IPv4 address for the DNS server 2. This option is only available when <code>dns-service</code> is set to <code>specify</code> .	0.0.0.0
dns-server3 <xxx.xxx.xxx.xxx>	Enter the IPv4 address for the DNS server 3. This option is only available when <code>dns-service</code> is set to <code>specify</code> .	0.0.0.0
dns-service {default   local   specify}	Select how DNS servers are assigned to DHCP clients. Select <code>local</code> to use the IP address of the DHCP server interface for the client's DNS server IP address. Select <code>default</code> for clients to be assigned the FortiSwitch unit's configured DNS servers. Select <code>specify</code> to enter the IPv4 address for up to three DNS servers.	specify
domain <string>	Enter the domain name suffix for the IP addresses that the DHCP server assigns to the clients.	No default
filename <string>	Enter the name of the boot file on the TFTP server.	No default
interface <string>	Enter the name of the interface. The DHCP server can assign IP configurations to clients connected to this interface.	No default
lease-time <integer>	<p>The lease time determines the length of time an IP address remains assigned to a client. After the lease expires, the address is released for allocation to the next client that requests an IP address.</p> <p>Enter the lease time in seconds. The range is 300-8640000. The default lease time is seven days.</p>	604800
netmask <xxx.xxx.xxx.xxx>	Enter the netmask of the addresses that the DHCP server assigns.	0.0.0.0
next-server <xxx.xxx.xxx.xxx>	Enter the IPv4 address of a server (for example, a TFTP sever) that DHCP clients can download a boot file from.	0.0.0.0

Variable	Description	Default
ntp-server1 <xxx.xxx.xxx.xxx>	Enter the IPv4 address for the NTP server 1. This option is only available when <code>ntp-service</code> is set to <code>specify</code> .	0.0.0.0
ntp-server2 <xxx.xxx.xxx.xxx>	Enter the IPv4 address for the NTP server 2. This option is only available when <code>ntp-service</code> is set to <code>specify</code> .	0.0.0.0
ntp-server3 <xxx.xxx.xxx.xxx>	Enter the IPv4 address for the NTP server 3. This option is only available when <code>ntp-service</code> is set to <code>specify</code> .	0.0.0.0
ntp-service {default   local   specify}	Select how Network Time Protocol (NTP) servers are assigned to DHCP clients. Select <code>local</code> to use the IP address of the DHCP server interface for the client's NTP server IP address. Select <code>default</code> for clients to be assigned the FortiSwitch unit's configured NTP servers. Select <code>specify</code> to enter the IPv4 address for up to three NTP servers.	specify
status {enable   disable}	Enable or disable this DHCP configuration.	enable
tftp-server <string>	You can configure multiple Trivial File Transfer Protocol (TFTP) servers for a Dynamic Host Configuration Protocol (DHCP) server. For example, you may want to configure a main TFTP server and a backup TFTP server.  Enter the hostname or IP address of each TFTP server in quotes. Separate multiple server entries with spaces.	No default
timezone <00-75>	Enter the time zone to be assigned to DHCP clients. This option is only available if <code>timezone-option</code> is set to <code>specify</code> .	(GMT+12:00)Eniwetok,Kwajalein)
timezone-option {default   disable   specify}	Select how the DHCP server sets the client's time zone. Select <code>disable</code> for the DHCP server to not set the client's time zone. Select <code>default</code> for clients to be assigned the FortiSwitch unit's configured time zone. Select <code>specify</code> to enter the time zone to be assigned to DHCP clients.	disable
vci-match {enable   disable}	Enable or disable vendor class identifier (VCI) matching. When enabled, only DHCP requests with a matching VCI are served.	disable

Variable	Description	Default
vci-string <VCI_strings>	Enter one or more VCI strings. This option is only available if <code>vci-match</code> is set to <code>enable</code> .	No default
wifi-ac1 <xxx.xxx.xxx.xxx>	Enter the IPv4 address for the WiFi Access Controller 1 (DHCP option 138, RFC 5417).	0.0.0.0
wifi-ac2 <xxx.xxx.xxx.xxx>	Enter the IPv4 address for the WiFi Access Controller 2 (DHCP option 138, RFC 5417).	0.0.0.0
wifi-ac3 <xxx.xxx.xxx.xxx>	Enter the IPv4 address for the WiFi Access Controller 3 (DHCP option 138, RFC 5417).	0.0.0.0
wins-server1 <xxx.xxx.xxx.xxx>	Enter the IPv4 address for the WINS server 1.	0.0.0.0
wins-server2 <xxx.xxx.xxx.xxx>	Enter the IPv4 address for the WINS server 2.	0.0.0.0
<b>config exclude-range</b>		
<id>	Enter the identifier.	No default
end-ip <xxx.xxx.xxx.xxx>	Enter the end of the IP address range that will not be assigned to clients.	0.0.0.0
start-ip <xxx.xxx.xxx.xxx>	Enter the start of the IP address range that will not be assigned to clients.	0.0.0.0
<b>config ip-range</b>		
<id>	Enter the identifier.	No default
end-ip <xxx.xxx.xxx.xxx>	Enter the end of the DHCP IP address range.	0.0.0.0
start-ip <xxx.xxx.xxx.xxx>	Enter the start of the DHCP IP address range.	0.0.0.0
<b>config options</b>		
<id>	Enter the identifier.	No default
code <integer>	Select the DHCP option code. The range is 0-255.	9
ip <IP_addresses>	If <code>type</code> is set to <code>ip</code> , enter the IP addresses.	No default
type {fqdn   hex   ip   string}	Select the format of the DHCP option: fully qualified domain name, hexadecimal, IP address, or string.	hex
value <string>	Enter the DHCP option value. This option is available when <code>type</code> is set to <code>fqdn</code> , <code>hex</code> , or <code>string</code> .	No default

Variable	Description	Default
<b>config reserved-address</b>		
<id>	Enter the identifier.	No default
action {assign   block   reserved}	Select how the DHCP server configures the client with the reserved MAC address. Select <code>assign</code> for the DHCP server to configure the client with this MAC address like any other client. Select <code>block</code> to prevent the DHCP server from assigning IP settings to the client with this MAC address. Select <code>reserved</code> for the DHCP server to assign the reserved IP address to the client with this MAC address.	reserved
circuit-id {<string>   <hex>}	Enter the DHCP option-82 Circuit ID of the client that will get the reserved IP address. The circuit-id format is controlled by the <code>circuit-id-type</code> setting. This option is only available when <code>type</code> is set to <code>option82</code> .	No default
circuit-id-type {hex   string}	Select whether the format of <code>circuit-id</code> is hexadecimal or string. This option is only available when <code>type</code> is set to <code>option82</code> .	string
description <string>	Enter a description of this entry.	No default
ip <xxx.xxx.xxx.xxx>	Enter the IPv4 address to be reserved for the MAC address. This option is only available when <code>action</code> is set to <code>reserved</code> .	0.0.0.0
mac <xx:xx:xx:xx:xx:xx>.	Enter the MAC address of the client that will get the reserved IP address. This option is only available when <code>type</code> is set to <code>mac</code> .	00:00:00:00:00:00
remote-id {<string>   <hex>}	Enter the DHCP option-82 Remote ID of the client that will get the reserved IP address. This option is only available when <code>type</code> is set to <code>option82</code> .	No default
remote-id-type {hex   string}	Select whether the format of <code>remote-id</code> is hexadecimal or string. This option is only available when <code>type</code> is set to <code>option82</code> .	string
type {mac   option82}	Select whether to match the IP address with the MAC address or DHCP option 82.	mac

## Example

This example shows how to configure a DHCP server:

```
config system dhcp server
edit 1
```

```
set default-gateway 50.50.50.2
set domain "FortiswitchTest.com"
set filename "text1.conf"
set interface "svi10"
config ip-range
  edit 1
    set end-ip 50.50.0.10
    set start-ip 50.50.0.5
  next
end
set lease-time 360
set netmask 255.255.0.0
set next-server 60.60.60.2
config options
  edit 1
    set value "dddd"
  next
end
set tftp-server "1.2.3.4"
set timezone-option specify
set wifi-ac1 5.5.5.1
set wifi-ac2 5.5.5.2
set wifi-ac3 5.5.5.3
set wins-server1 6.6.6.1
set wins-server2 6.6.6.2
set dns-server1 7.7.7.1
set dns-server2 7.7.7.2
set dns-server3 7.7.7.3
set ntp-server1 8.8.8.1
set ntp-server2 8.8.8.2
set ntp-server3 8.8.8.3
next
end
```

## config system dns

Use this command to set the DNS server addresses. Several FortiSwitch functions, including sending email alerts and URL blocking, use DNS.

### Syntax

```
config system dns
  set cache-notfound-responses {enable | disable}
  set dns-cache-limit <integer>
  set dns-cache-ttl <int>
  set domain <domain_name>
  set ip6-primary <dns_ipv6>
  set ip6-secondary <dns_ip6>
  set primary <dns_ipv4>
  set secondary <dns_ip4>
  set source-ip <ipv4_addr>
end
```



Variable	Description	Default
cache-notfound-responses {enable   disable}	Enable to cache NOTFOUND responses from the DNS server.	disable
dns-cache-limit <integer>	Set maximum number of entries in the DNS cache.	5000
dns-cache-ttl <int>	Enter the duration, in seconds, that the DNS cache retains information.	1800
domain <domain_name>	Set the local domain name (optional).	No default
ip6-primary <dns_ip6>	Enter the primary IPv6 DNS server IP address.	::
ip6-secondary <dns_ip6>	Enter the secondary IPv6 DNS server IP address.	::
primary <dns_ip4>	Enter the primary DNS server IP address.	0.0.0.0
secondary <dns_ip4>	Enter the secondary DNS IP server address.	0.0.0.0
source-ip <ipv4_addr>	Enter the IP address for communications to DNS server.	0.0.0.0

## Example

This example shows how to set the DNS server addresses:

```
config system dns
    set cache-notfound-responses enable
    set dns-cache-limit 2000
    set dns-cache-ttl 900
    set domain fortinet.com
    set primary 172.91.112.53
    set secondary 172.91.112.52
end
```

## config system fips-cc

Use this command to configure Federal Information Processing Standards (FIPS) mode.



Back up your FortiSwitch configuration before enabling or disabling FIPS mode. When you enable or disable FIPS mode, your switch configuration is deleted.

## Syntax

```
config system fips-cc
    set entropy-token {disable | dynamic | enable}
    set reseed-interval <0-1440 minutes>
    set self-test-interval <0-1440 minutes>
    set status {disable | enable}
end
```

Variable	Description	Default
entropy-token {disable   dynamic   enable}	Specify whether to use the entropy seed: <ul style="list-style-type: none"> <li><b>disable</b>—Do not use the entropy seed.</li> <li><b>dynamic</b>—The FortiSwitch unit detects whether the entropy seed is present when the switch starts.</li> <li><b>enable</b>—Use the entropy seed when the switch starts. This setting is required for FIPS mode.</li> </ul>	dynamic
reseed-interval <0-1440 minutes>	Set the number of minutes between reseeding the entropy token.	1440
self-test-interval <0-1440 minutes>	Set the number of minutes between self-tests of the system. Set this option to 0 to disable system self-tests.	0
status {disable   enable}	Enable or disable FIPS mode.	disable

## Example

This example shows how to configure FIPS mode:

```
config system fips-cc
    set entropy-token enable
    set reseed-interval 720
    set self-test-interval 720
    set status enable
end
```

## config system flow-export

You can sample IP packets on a FortiSwitch unit and then export the data in NetFlow format or Internet Protocol Flow Information Export (IPFIX) format.

The maximum number of concurrent flows is defined by the FortiSwitch model. When this limit is exceeded, the oldest flow expires and is exported.

## Syntax

```
config system flow-export
    set filter <string>
    set format {netflow1 | netflow5 | netflow9 | ipfix}
    set identity <hexadecimal>
    set level {ip | mac | port | proto | vlan}
    set max-export-pkt-size <integer>
    set template-export-period <1-60>
    set timeout-general <integer>
    set timeout-icmp <integer>
    set timeout-max <integer>
    set timeout-tcp <integer>
    set timeout-tcp-fin <integer>
    set timeout-tcp-rst <integer>
    set timeout-udp <integer>
    config collectors
        edit <collector_name>
```

```

        set ip <IPv4_address>
        set port <port_number>
        set transport {sctp | tcp | udp}
    end
config aggregates
    edit <aggregate_ID>
        set ip <IPv4_address_mask>
    end
end
end

```

Variable	Description	Default
filter <string>	Specify the Berkeley packet filter (BPF) to use. For example, <code>set filter "host 33.33.33.2"</code> .	No default
format {netflow1   netflow5   netflow9   ipfix}	<p>You can set the format of the exported flow data as NetFlow version 1, NetFlow version 5, NetFlow version 9, or IPFIX sampling.</p> <p><b>NOTE:</b> When the export format is NetFlow version 5, the sample rate used in the exported packets is derived from the lowest port number where sampling is enabled. Fortinet recommends that administrators using NetFlow version 5 set the sample rate consistently across all ports.</p>	netflow9
identity <hexadecimal>	Required. Enter a unique number to identify which FortiSwitch unit the data originates from. The range of values is 0x00000000-0xFFFFFFFF. If <code>identity</code> is not specified, the "Burn in MAC" value is used instead (see <code>get system status</code> ).	0x00000000
level {ip   mac   port   proto   vlan}	<p>You can set the flow-tracking level to one of the following: -</p> <ul style="list-style-type: none"> <li><code>ip</code>—The FortiSwitch unit collects the source IP address and destination IP address from the sample packet.</li> <li><code>mac</code>—The FortiSwitch unit collects the source MAC address and destination MAC address from the sample packet.</li> <li><code>port</code>—The FortiSwitch unit collects the source IP address, destination IP address, source port, destination port, and protocol from the sample packet.</li> <li><code>proto</code>—The FortiSwitch unit collects the source IP address, destination IP address, and protocol from the sample packet.</li> <li><code>vlan</code>—The FortiSwitch unit collects the source IP address, destination IP address, source port, destination port, protocol, and VLAN from the sample packet.</li> </ul>	ip
max-export-pkt-size <integer>	Set the maximum size in bytes of exported packets in the application level. The range of values is 512-9216.	512
template-export-period <1-60>	Set the number of minutes before the template is exported.	5

Variable	Description	Default
timeout-general <integer>	Set the general timeout in seconds for the flow session. The range of values is 60-604800.	3600
timeout-icmp <integer>	Set the ICMP timeout for the flow session. The range of values is 60-604800.	300
timeout-max <integer>	Set the maximum number of seconds before the flow session times out. The range of values is 60-604800.	604800
timeout-tcp <integer>	Set the TCP timeout for the flow session. The range of values is 60-604800.	3600
timeout-tcp-fin <integer>	Set the TCP FIN flag timeout for the flow session. The range of values is 60-604800.	300
timeout-tcp-rst <integer>	Set the TCP RST flag timeout for the flow session. The range of values is 60-604800.	120
timeout-udp <integer>	Set the UDP timeout for the flow session. The range of values is 60-604800.	300
<b>config collectors</b>		
<collector_name>	Enter the name of the flow-export collector.	No default
ip <IPv4_address>	Enter the IP address for the collector.  The default is 0.0.0.0. Setting the value to "0.0.0.0" or "" disables this feature. The format is xxx.xxx.xxx.xxx.	0.0.0.0
port <port_number>	Enter the port number for the collector.  The range of values is 0-65535. The default port for NetFlow is 2055; the default port for IPFIX is 4739.	0
transport {sctp   tcp   udp}	You can set exported packets to use UDP, TCP, or SCTP for transport.	udp
<b>config aggregates</b>		
<id>	Enter the identifier.	No default
<IPv4_address_mask>	Enter the IPv4 address and mask to match. All matching sessions are aggregated into the same flow.	No default

## Example

This example shows how to configure flow export:

```
config system flow-export
  set format ipfix
  set level ip
  config collectors
    edit flowone
      set ip 169.254.3.1
      set port 5
```

```
        set transport tcp
    next
end
end
```

## config system flan-cloud

Use this command to configure FortiLAN Cloud. FortiLAN Cloud allows you to quickly check the status and to configure multiple FortiSwitch units through a single management portal.

**NOTE:** To use FortiLAN Cloud, you must have a Cloud Management license, and your FortiSwitch unit must be in standalone mode, connected to the Internet, and the system time must be accurate. To set the time on your FortiSwitch unit, see [config system ntp on page 212](#).

### Syntax

```
config system flan-cloud
    set interval <integer>
    set name <string>
    set port <port_number>
    set status {enable | disable}
end
```

Variable	Description	Default
interval <integer>	The time in seconds allowed for domain name system (DNS) resolution. The value range is 3-300 seconds.	3
name <string>	The domain name for the FortiLAN Cloud.	fortiswitch-dispatch.forticloud.com
port <port_number>	Port number used to connect to FortiLAN Cloud.	443
status {enable   disable}	Whether FortiLAN Cloud discovery is enabled or disabled.	disable

### Example

This example shows how to configure FortiLAN Cloud:

```
config system flan-cloud
    set interval 150
    set name fortiswitch-dispatch.forticloud.com
    set port 443
    set status enable
end
```

## config system global

Use this command to configure global settings that affect various FortiSwitch systems and configurations.

## Syntax

```

config system global
    set 802.1x-ca-certificate {Fortinet_802.1x_CA | Fortinet_CA | Fortinet_CA2 | Fortinet_
        Sub_CA2 | Fortinet_fsw_cloud_CA}
    set 802.1x-certificate {Fortinet_802.1x | Fortinet_Factory | Fortinet_Factory2 |
        Fortinet_Firmware}
    set admin-concurrent {enable | disable}
    set admin-https-pki-required {enable | disable}
    set admin-lockout-duration <time_int>
    set admin-lockout-threshold <failed_int>
    set admin-scp {enable | disable}
    set admin-ssh-grace-time <time_int>
    set admin-ssh-port <port_number>
    set admin-ssh-v1 {enable | disable}
    set admin-telnet-port <port_number>
    set admintimeout <admin_timeout_minutes>
    set alertrd-relog {enable | disable}
        set alert-interval <1-1440 minutes>
    set allow-subnet-overlap {enable | disable}
    set arp-timeout <seconds>
    set asset-tag <string>
    set cfg-save {automatic | manual | revert}
    set clt-cert-req {enable | disable}
    set csr-ca-attribute {enable | disable}
    set daily-restart {enable | disable}
    set detect_ip_conflict {enable | disable}
    set dhcp-client-location {description | hostname | intfname | mode | vlan}
    set dhcp-option-format {ascii | legacy}
    set dhcp-remote-id {hostname | ip | mac}
    set dhcp-server-access-list {enable | disable}
    set dhcp-snoop-client-req {drop-untrusted | forward-untrusted}
    set dhcps-db-exp <number_of_seconds>
    set dhcps-db-per-port-learn-limit <number_of_entries>
    set dst {enable | disable}
    set hostname <unithostname>
    set image-rotation {enable | disable}
    set ip-conflict-ignore-default {enable | disable}
    set ipv6-accept-dad <0 | 1 | 2>
    set ipv6-all-forwarding {enable | disable}
    set kernel-crashlog {enable | disable}
    set kernel-devicelog {enable | disable}
    set l3-host-expiry {enable | disable}
    set ldapconntimeout <ldaptimeout_msec>
    set post-login-banner "<string>"
    set pre-login-banner "<string>"
    set private-data-encryption {enable | disable}
    set radius-coa-port <port_number>
    set radius-port <radius_port>
    set remoteauthtimeout <timeout_sec>
    set revision-backup-on-logout {enable | disable}
    set revision-backup-on-upgrade {enable | disable}
    set strong-crypto {enable | disable}
    set tcp-mss-min <48-10000>
    set tcp6-mss-min<48-10000>
    set timezone <timezone_number>
end

```

Variable	Description	Default
802.1x-ca-certificate {Fortinet_802.1x_CA   Fortinet_CA   Fortinet_CA2   Fortinet_Sub_CA2   Fortinet_fsw_cloud}	Set the CA certificate for port security (802.1x): <ul style="list-style-type: none"> <li>Fortinet_802.1x_CA—Select this CA if you are using 802.1x authentication.</li> <li>Fortinet_CA—Select this CA if you want to use the factory-installed certificate.</li> <li>Fortinet_CA2—Select this CA if you want to use the factory-installed certificate.</li> <li>Fortinet_Sub_CA2—Select this CA if you want to use the factory-installed certificate.</li> <li>Fortinet_fsw_cloud—Select this CA if you are using FortiLAN Cloud.</li> </ul>	Fortinet_802.1x_CA
802.1x-certificate {Fortinet_802.1x   Fortinet_Factory   Fortinet_Factory2   Fortinet_Firmware}	Set the certificate for port security (802.1x): <ul style="list-style-type: none"> <li>Fortinet_802.1x—This certificate is embedded in the firmware and is the same on every unit (not unique). It has been signed by a public CA. This is the default certificate for 802.1x authentication.</li> <li>Fortinet_Factory—This certificate is embedded in the hardware at the factory and is unique to this unit. It has been signed by a proper CA.</li> <li>Fortinet_Factory2—This certificate is embedded in the hardware at the factory and is unique to this unit. It has been signed by a proper CA.</li> <li>Fortinet_Firmware—This certificate is embedded in the firmware and is the same on every unit (not unique). It has been signed by a proper CA. It is not recommended to use it for server-type functionality since any other unit could use this same certificate to spoof the identity of this unit.</li> </ul>	Fortinet_802.1x
admin-concurrent {enable   disable}	Enable to enforce concurrent administrator logins. When enabled, the FortiSwitch restricts concurrent access from the same admin user name but on different IP addresses. Use <code>policy-auth-concurrent</code> for firewall authenticated users.	enable
admin-lockout-duration <time_int>	Set the administration account's lockout duration in seconds for the firewall. Repeated failed login attempts will enable the lockout. Use <code>admin-lockout-threshold</code> to set the number of failed attempts that will trigger the lockout.	60
admin-lockout-threshold <failed_int>	Set the threshold, or number of failed attempts, before the account is locked out for the <code>admin-lockout-duration</code> .	3
admin-scp {enable   disable}	Enable to allow system configuration download by the secure copy (SCP) protocol.	disable

Variable	Description	Default
admin-ssh-grace-time <time_int>	Enter the maximum time permitted between making an SSH connection to the FortiSwitch and authenticating. Range is 10 to 3600 seconds.	120
admin-ssh-port <port_number>	Enter the port to use for SSH administrative access.	22
admin-ssh-v1 {enable   disable}	Enable compatibility with SSH v1.0.	disable
admin-telnet-port <port_number>	Enter the port to use for telnet administrative access.	23
admintimeout <admin_timeout_minutes>	Set the number of minutes before an idle administrator times out. This controls the amount of inactive time before the administrator must log in again. The maximum <code>admintimeout</code> interval is 480 minutes (8 hours). To improve security, keep the idle timeout at the default value of 5 minutes.	5
alertd-relog {enable   disable}	Enable or disable re-logs when a sensor exceeds its threshold.	disable
alert-interval	<b>NOTE:</b> This command is only available after the <code>alertd-relog</code> option has been enabled. Set how often an alert is generated for temperature sensors when they exceed their set thresholds.	30
allow-subnet-overlap {enable   disable}	Use this command to allow two interfaces to include the same IP address in the same subnet. The command applies only between the mgmt interface and an internal interface. <b>Note:</b> Different interfaces cannot have overlapping IP addresses or subnets. <b>Caution: For advanced users only.</b> Use this only for existing network configurations that cannot be changed to eliminate IP address overlapping.	disable
arp-timeout <seconds>	Set the number of seconds before dynamic ARP entries are removed from the cache.	300
asset-tag	LLDP uses the asset tag to help identify the unit. The asset tag can be up to 32 characters, and will be added to the LLDP-MED inventory TLV (when that TLV is enabled).	No default
cfg-save {automatic   manual   revert}	Set the method for saving the FortiSwitch system configuration and enter into runtime-only configuration mode. Methods for saving the configuration are: <ul style="list-style-type: none"> <li><code>automatic</code> automatically save the configuration after every change.</li> <li><code>manual</code> manually save the configuration using the <a href="#">execute acl key-compaction on page 329</a> command.</li> </ul>	automatic



Variable	Description	Default
	<ul style="list-style-type: none"> <li><code>revert</code> manually save the current configuration and then revert to that saved configuration after <code>cfg-revert-timeout</code> expires.</li> </ul> Switching to automatic mode disconnects your session. This command is used as part of the runtime-only configuration mode.	
<code>clt-cert-req {enable   disable}</code>	Enable or disable the requirement to have a client certificate to log in to the GUI.	disable
<code>csr-ca-attribute {enable   disable}</code>	Enable to use the CA attribute in your certificate. Some CA servers reject CSRs that have the CA attribute.	enable
<code>daily-restart {enable   disable}</code>	Enable to restart the FortiSwitch every day. The time of the restart is controlled by <code>restart-time</code> .	disable
<code>detect_ip_conflict {enable   disable}</code>	Enable the Detect IP Conflict feature.	enable
<code>dhcp-client-location {description   hostname   intfname   mode   vlan}</code>	Select which parameters to include to describe the client location. Separate multiple parameters with a space. <ul style="list-style-type: none"> <li><code>description</code>—Include the interface description.</li> <li><code>hostname</code>—Include the host name.</li> <li><code>intfname</code>—Include the interface name.</li> <li><code>mode</code>—Include the mode.</li> <li><code>vlan</code>—Include the VLAN.</li> </ul>	intfname vlan mode
<code>dhcp-option-format {ascii   legacy}</code>	Select the format for the DHCP string: <ul style="list-style-type: none"> <li><code>ascii</code>—This format allows the user to choose the values for the circuit-id and remote-id fields.</li> <li><code>legacy</code>—This format generates a predefined fixed format for the circuit-id and remote-id fields.</li> </ul>	ascii
<code>dhcp-remote-id {hostname   ip   mac}</code>	Select which parameters to include in the remote-id field: <ul style="list-style-type: none"> <li><code>hostname</code>—Include the host name.</li> <li><code>ip</code>—Include the IP address.</li> <li><code>mac</code>—Include the MAC address.</li> </ul>	mac
<code>dhcp-server-access-list {enable   disable}</code>	Set to <code>disable</code> for DHCP snooping to allow any DHCP server from trusted interfaces. Set to <code>enable</code> for DHCP snooping to allow only DHCP servers that are included in the allowed server list.	disable
<code>dhcp-snoop-client-req {drop-untrusted   forward-untrusted}</code>	Select which transmission mode to use for broadcasting client DHCP packets: <ul style="list-style-type: none"> <li><code>drop-untrusted</code>—Client packets are broadcasted on trusted ports in the VLAN.</li> <li><code>forward-untrusted</code>—By default, client packets are broadcasted on all ports in the VLAN.</li> </ul>	forward-untrusted

Variable	Description	Default
dhcps-db-exp <number_of_seconds>	Set the number of seconds for a DHCP-snooping server database entry to be kept. The range of values is 300-259200.	86400
dhcps-db-per-port-learn-limit <number_of_entries>	Set the maximum number of DHCP server entries that are learned per interface. The range of values is 0-1024.	64
dst {enable   disable}	Enable or disable daylight saving time. If you enable daylight saving time, the FortiSwitch unit adjusts the system time when the time zone changes to daylight saving time and back to standard time.	enable
hostname <unithostname>	Enter a name to identify this FortiSwitch unit. A hostname can only include letters, numbers, hyphens, and underlines. No spaces are allowed.  While the hostname can be longer than 16 characters, if it is longer than 16 characters it will be truncated and end with a "~" to indicate it has been truncated. This shortened hostname will be displayed in the CLI, and other locations the hostname is used.  Some models support hostnames up to 35 characters.  By default the hostname of your system is its serial number which includes the model.	FortiSwitch serial number.
image-rotation {enable   disable}	Enable or disable the rotation of the partition used to upgrade the FortiSwitch image.	enable
ip-conflict-ignore-default {enable   disable}	Enable or disable IP conflict detection for the default IP address.	enable
ipv6-accept-dad <0   1   2>	Specify whether to accept IPv6 duplicate address detection (DAD). Set to 0 to disable DAD. Set to 1 to enable DAD. Set to 2 to enable DAD and disable IPv6 operation if a MAC-based duplicate link-local address is found.	1
ipv6-all-forwarding {enable   disable}	Enable or disable IPv6 forwarding.	enable
kernel-crashlog {enable   disable}	Enable or disable whether to log a kernel crash.	enable
kernel-devicelog {enable   disable}	Enable or disable the capture of kernel device messages to the log.	enable
l3-host-expiry {enable   disable}	Enable or disable layer-3 host expiry.	disable
ldapconntimeout <ldaptimeout_msec>	LDAP connection timeout in msec	500
post-login-banner "<string>"	Enter a message for the system post-login banner.	No default
pre-login-banner "<string>"	Enter a message for the system pre-login banner.	No default

Variable	Description	Default
private-data-encryption {enable   disable}	Enable or disable private data encryption using an AES 128-bit key.	disable
radius-coa-port <port_number>	Set the port number to be used for the RADIUS change of authorization (CoA).	3799
radius-port <radius_port>	Change the default RADIUS port. The default port for RADIUS traffic is 1812. If your RADIUS server is using port 1645 you can use the CLI to change the default RADIUS port on your system.	1812
remoteauthtimeout <timeout_sec>	The number of seconds that the FortiSwitch waits for responses from remote RADIUS, LDAP, or TACACS+ authentication servers. The range is 0 to 300 seconds, 0 means no timeout.  To improve security keep the remote authentication timeout at the default value of 5 seconds. However, if a RADIUS request needs to traverse multiple hops or several RADIUS requests are made, the default timeout of 5 seconds may not be long enough to receive a response.	5
revision-backup-on-logout {disable   enable}	Enable or disable backing up the latest configuration revision when the administrator logs out of the CLI or Web GUI.	enable
revision-backup-on-upgrade {enable   disable}	Enable or disable backing up the latest configuration revision when the administrator starts an upgrade.	enable
strong-crypto {enable   disable}	Strong encryption and only allow strong ciphers (AES, 3DES) and digest (SHA1) for HTTPS/SSH admin access. When strong encryption is enabled, HTTPS is supported by the following web browsers: Netscape 7.2, Netscape 8.0, Firefox, and Microsoft Internet Explorer 7.0 (beta). <b>NOTE:</b> Microsoft Internet Explorer 5.0 and 6.0 are not supported in strong encryption.	disable
switch-mgmt-mode {fortilink   local}	Determines whether the switch is being managed locally, or managed by a FortiGate through a FortiLink connection.	local
tcp-mss-min <48-10000>	Enter the minimum allowed TCP MSS value in bytes.	48
tcp6-mss-min <48-10000>	Enter the minimum allowed TCP MSS value in bytes.	48
timezone <timezone_number>	The number corresponding to your time zone from 00 to 72. Press ? to list time zones and their numbers. Choose the time zone for the FortiSwitch from the list and enter the correct number.	00

## Example

This example shows how to set your private data encryption key:

```
S548DN5018000535 # config system global
```

```
S548DN5018000535 (global) # set private-data-encryption enable

S548DN5018000535 (global) # end
Please type your private data encryption key (32 hexadecimal numbers):
0123456789abcdefabcdef0123456789
Please re-enter your private data encryption key (32 hexadecimal numbers) again:
0123456789abcdefabcdef0123456789
Your private data encryption key is accepted.
```

This example shows how to set the lockout threshold to one attempt and the duration before the administrator can try again to log in to five minutes:

```
config system global
    set admin-lockout-threshold 1
    set admin-lockout-duration 300
end
```

## config system interface

Use this command to edit the configuration of an interface.



If you enter a name string in the `edit` command that is not the name of a physical interface, the command creates a VLAN subinterface.

---

### Syntax

```
config system interface
edit <interface_name>
    set allowaccess <access_types>
    set alias <name_string>
    set bfd {enable | disable | global}
    set bfd-desired-min-tx <interval_msec>
    set bfd-detect-mult <multiplier>
    set bfd-required-min-rx <interval_msec>
    set description <text>
    set dhcp-relay-service {enable | disable}
        set dhcp-relay-ip <dhcp_relay1_ipv4> {... <dhcp_relay8_ipv4>}
        set dhcp-relay-option82 {enable | disable}
    set dhcp-vendor-specific-option <string>
    set external {enable | disable}
    set fail-detect {enable | disable}
        set fail-detect-option {link-down | detectserver}
        set fail-alert-method {link-down | link-failed-signal}
        set fail-alert-interfaces {port1 port2 ...}
    set icmp-redirect {enable | disable}
    set interface <interface_name>
    set ip <interface_ipv4mask>
    set log {enable | disable}
    set mode <static | dhcp>
        set dhcp-client-identifier <client_name_str>
        set distance <1-255>
```

```
    set defaultgw {enable | disable}
    set dns-server-override {enable | disable}
set mtu-override {enable | disable}
set secondary-IP {enable | disable}
set snmp-index <integer>
set src-check {disable | loose | strict}
set src-check-allow-default {enable | disable}
set status {down | up}
set type {loopback | vlan}
set vlanid <id_number>
set vrf <string>
set vrrp-virtual-mac {enable | disable}
config ipv6
    set ip6-address <ip6_netmask>
    set ip6-allowaccess <access_types>
    set autoconf {disable | enable}
    set ip6-unknown-mcast-to-cpu {disable | enable}
    set ip6-mode {dhcp | static}
    set ip6-dns-server-override {disable | enable}
    set dhcp6-information-request {disable | enable}
    set ip6-send-adv {disable | enable}
    set ip6-manage-flag {disable | enable}
    set ip6-other-flag {disable | enable}
    set ip6-max-interval <4-1800>
    set ip6-min-interval <3-1350>
    set ip6-link-mtu <integer>
    set ip6-reachable-time <0-3600000>
    set ip6-retrans-time <0-2147483647>
    set ip6-default-life <0-9000>
    set ip6-hop-limit <0-255>
    set vrip6_link_local {enable | disable}
    set vrrp-virtual-mac6 {enable | disable}
    config ip6-extra-address
        edit <prefix_ipv6>
    end
    config ip6-prefix-list
        edit <prefix_ipv6>
            set autonomous-flag {disable | enable}
            set onlink-flag {disable | enable}
            set preferred-life-time <0-2147483647>
            set valid-life-time <0-2147483647>
        end
    end
config secondaryip
    edit <id>
        set ip <IP_address_and_netmask>
        set allowaccess <access_types>
config vrrp
    edit <VRID_int>
        set adv-interval <seconds_int>
        set backup-vmac-fwd {enable | disable}
        set preempt {enable | disable}
        set priority <prio_int>
        set start-time <seconds_int>
        set status {enable | disable}
        set version {2 | 3}
        set vrdst <ipv4_addr>
```

```
set vrgrp <integer>
set vrip <ipv4_addr>
```



A VLAN cannot have the same name as a zone or a virtual domain.

Variable	Description	Default
<interface_name>	Edit an existing interface or create a new VLAN interface.	No default
allowaccess <access_types>	Enter the types of management access permitted on this interface or secondary IP address. Valid types are: <code>http https ping radius-acct snmp ssh telnet</code> . Separate each type with a space. To add or remove an option from the list, retype the complete list as required.	Varies for each interface.
alias <name_string>	Enter an alias name for the interface. Once configured, the alias will be displayed with the interface name to make it easier to distinguish. The alias can be a maximum of 25 characters. This option is only available when interface type is <code>physical</code> .	No default.
bfd {enable   disable   global}	The status of bidirectional forwarding detection (bfd) on this interface: <ul style="list-style-type: none"> <li><code>enable</code> — enable BFD and ignore global BFD configuration.</li> <li><code>disable</code> — disable BFD on this interface.</li> <li><code>global</code> — use the BFD configuration in <code>system settings</code> for the virtual domain to which this interface belongs.</li> </ul>	global
bfd-desired-min-tx <interval_msec>	Enter the minimum desired interval for the BFD transmit interval. Valid range is from 1 to 100 000 msec. This option is available only when <code>bfd</code> is enabled.	50
bfd-detect-mult <multiplier>	Select the BFD detection multiplier. This option is available only when <code>bfd</code> is enabled.	3
bfd-required-min-rx <interval_msec>	Enter the minimum required interface for the BFD receive interval. Valid range is from 1 to 100 000 msec. This is available only when <code>bfd</code> is enabled.	50
description <text>	Optionally, enter up to 63 characters to describe this interface.	No default
dhcp-relay-service {enable   disable}	Enable to provide DHCP relay service on this interface. The DHCP type relayed depends on the setting of <code>dhcp-relay-type</code> . There must be no other DHCP server of the same type (regular or ipsec) configured on this interface.	disable

Variable	Description	Default
dhcp-relay-ip <dhcp_relay1_ip v4> {... <dhcp_relay8_ip v4>}	Set DHCP relay IP addresses. You can specify up to eight DHCP relay servers for DHCP coverage of subnets. Replies from all DHCP servers are forwarded back to the client. The client responds to the offer it wants to accept.  Do not set <code>dhcp-relay-ip</code> to 0.0.0.0. This option is available only when <code>dhcp-relay-service</code> is enabled.	No default
dhcp-relay-option82 {enable   disable}	Enable to allow option-82 insertion in the DHCP relay. This option is available only when <code>dhcp-relay-service</code> is enabled.	disable
dhcp-vendor-specific-option <string>	Set the value for DHCP vendor-specific option 43.	No default
external {enable   disable}	Enable to indicate that an interface is an external interface connected to an external network. This option is used for SIP NAT when the <code>config VoIP profile SIP contact-fixup</code> option is disabled.	disable
fail-detect {enable   disable}	Enable interface failure detection.	disable
fail-detect-option {link-down   detectserver}	Select whether the system detects interface failure by port detection ( <code>link-down</code> ) or ping server ( <code>detectserver</code> ). This option is available only when <code>fail-detect</code> is enabled.	link-down
fail-alert-method {link-down   link-failed-signal}	Select the signal that the system uses to signal the link failure: Link Down or Link Failed. This option is available only when <code>fail-detect</code> is enabled.	link-down
fail-alert-interfaces {port1 port2 ...}	Select the interfaces to which failure detection applies. This option is available only when <code>fail-detect</code> is enabled.	No default
icmp-redirect {enable   disable}	Disable to stop ICMP redirect from sending from this interface. ICMP redirect messages are sent by a router to notify the original sender of packets that there is a better route available.	enable
interface <interface_name>	Enter the name of the interface. This option is available only when <code>vlanid</code> is set.	internal
ip <interface_ip v4 mask>	Enter the interface IP address and netmask. This option is not available if <code>mode</code> is set to <code>dhcp</code> . You can set the IP and netmask, but they are not displayed. This is only available in NAT/Route mode. The IP address cannot be on the same subnet as any other interface.	Varies for each interface.
log {enable   disable}	Enable or disable traffic logging of connections to this interface. Traffic will be logged only when it is on an administrative port. All other traffic will not be logged. Enabling this setting may reduce system performance, and is normally used only for troubleshooting.	disable
mode <interface_mode>	Configure the connection mode for the interface as one of:	static

Variable	Description	Default
	<ul style="list-style-type: none"> <li><code>static</code> — configure a static IP address for the interface.</li> <li><code>dhcp</code> — configure the interface to receive its IP address from an external DHCP server.</li> </ul>	
<code>dhcp-client-identifier</code>	Override the default DHCP client identifier used by this interface. The DHCP client identifier is used by DHCP to identify individual DHCP clients (in this case individual interfaces). By default, the DHCP client identifier for each interface is created based on the model name and the interface MAC address. In some cases, you might want to specify your own DHCP client identifier using this command. This option is available only when the <code>mode</code> is set to <code>dhcp</code> .	No default
<code>distance &lt;1-255&gt;</code>	Enter the distance of learned routes. This command is available only when <code>mode</code> is set to <code>dhcp</code> .	5
<code>defaultgw {enable   disable}</code>	Enable to get the gateway IP address from the DHCP server. This option is available only when the <code>mode</code> is set to <code>dhcp</code> .	disable
<code>dns-server-override {enable   disable}</code>	Disable to prevent this interface from using DNS server addresses it acquires by DHCP. This option is available only when the <code>mode</code> is set to <code>dhcp</code> .	enable
<code>mtu-override {enable   disable}</code>	Select enable to use custom MTU size instead of default (1 500). This is available only for physical interfaces and some tunnel interfaces (not IPsec). If you change the MTU size, you must reboot the FortiSwitch to update the MTU values of the VLANs on this interface. Some models support MTU sizes larger than the standard 1 500 bytes.	disable
<code>secondary-IP {enable   disable}</code>	Enable to add a secondary IP address to the interface. This option must be enabled before configuring a secondary IP address. When disabled, the Web-based manager interface displays only the option to enable secondary IP.	disable
<code>snmp-index &lt;integer&gt;</code>	Configure the SNMP index	
<code>src-check {disable   loose   strict}</code>	<p>Set to <code>disable</code> if you do not want to use unicast reverse-path forwarding (uRPF).</p> <p>Set to <code>strict</code> to ensure that the packet was received on the same interface that the router uses to forward the return packet.</p> <p>Set to <code>loose</code> to ensure that the routing table includes the source IP address of the packet.</p>	disable



Variable	Description	Default
src-check-allow-default {enable   disable}	<p>If you disable the <code>src-default-route-check</code> option, the packet is dropped if the source IP address is not found in the routing table. If you enable the <code>src-default-route-check</code> option, the packet is allowed even if the source IP address is not found in the routing table, but the default route is found in the routing table.</p> <p>This option is available only when <code>src-check</code> is set to <code>loose</code>.</p>	disable
status {down   up}	Start or stop the interface. If the interface is stopped, it does not accept or send packets. If you stop a physical interface, associated virtual interfaces such as VLAN interfaces will also stop.	up (down for VLANs)
type {loopback   vlan}	<p>Enter the type of interface. <b>NOTE:</b> Some types are read only and are set automatically by hardware.</p> <ul style="list-style-type: none"> <li><code>loopback</code> — a virtual interface that is always up. This interface's status and link status are not affected by external changes. It is primarily used for blackhole routing - dropping all packets that match this route. This route is advertised to neighbors through dynamic routing protocols as any other static route. loopback interfaces have no dhcp settings, no forwarding, no mode, or dns settings. You can create a loopback interface from the CLI or Web-based manager.</li> <li><code>vlan</code> — a virtual LAN interface. This is the type of interface created by default on any existing physical interface. VLANs increase the number of network interfaces beyond the physical connections on the system. VLANs cannot be configured on a switch mode interface in Transparent mode.</li> </ul>	vlan
vlanid <id_number>	Enter a VLAN ID that matches the VLAN ID of the packets to be received by this VLAN subinterface. The VLAN ID can be any number between 1 and 4094, as 0 and 4095 are reserved, but it must match the VLAN ID added by the IEEE 802.1Q-compliant router on the other end of the connection. Two VLAN subinterfaces added to the same physical interface cannot have the same VLAN ID. However, you can add two or more VLAN subinterfaces with the same VLAN ID to different physical interfaces, and you can add more multiple VLANs with different VLAN IDs to the same physical interface. This is available only when editing an interface with a type of <code>VLAN</code> .	No default
vrf <string>	<p>Assign this virtual routing and forwarding (VRF) instance to a switch virtual interface (SVI).</p> <p>After the SVI is created, the VRF instance cannot be changed or unset. The VRF instance cannot be assigned to an internal SVI.</p>	No default

Variable	Description	Default
vrrp-virtual-mac {enable   disable}	Enable VRRP virtual MAC addresses for the IPv4 VRRP routers added to this interface. See RFC 5798 for information about the VRRP virtual MAC addresses.	disable

## config ipv6

Configure IPv6 settings for the interface.

### Syntax

```

config system interface
edit <interface_name>
    config ipv6
        set ip6-address <ipv6_netmask>
        set ip6-allowaccess <access_types>
        set autoconf {disable | enable}
        set ip6-unknown-mcast-to-cpu {disable | enable}
        set ip6-mode {dhcp | static}
        set ip6-dns-server-override {disable | enable}
        set dhcp6-information-request {disable | enable}
        set ip6-send-adv {disable | enable}
        set ip6-manage-flag {disable | enable}
        set ip6-other-flag {disable | enable}
        set ip6-max-interval <4-1800>
        set ip6-min-interval <3-1350>
        set ip6-link-mtu <integer>
        set ip6-reachable-time <0-3600000>
        set ip6-retrans-time <0-2147483647>
        set ip6-default-life <0-9000>
        set ip6-hop-limit <0-255>
        set vrip6_link_local {enable | disable}
        set vrrp-virtual-mac6 {enable | disable}
        config ip6-extra-address
            edit <prefix_ipv6>
        end
    end
    config ip6-prefix-list
        edit <prefix_ipv6>
            set autonomous-flag {disable | enable}
            set onlink-flag {disable | enable}
            set preferred-life-time <0-2147483647>
            set valid-life-time <0-2147483647>
        end
    end
end
end

```

Variable	Description	Default
<interface_name>	Edit an existing interface or create a new VLAN interface.	No default
ip6-address <ipv6_netmask>	The interface IPv6 address and netmask. The format for IPv6 addresses and netmasks is described in RFC 3513.	::/0

Variable	Description	Default
	This command is only available in NAT/Route mode.	
ip6-allowaccess <access_types>	Enter the types of management access permitted on this IPv6 interface. Valid types are: <code>fgfm</code> , <code>http</code> , <code>https</code> , <code>ping</code> , <code>snmp</code> , <code>ssh</code> , and <code>telnet</code> . Separate the types with spaces. If you want to add or remove an option from the list, retype the list as required.	Varies for each interface.
autoconf {disable   enable}	Enable or disable the automatic address configuration.	disable
ip6-unknown-mcast-to-cpu {disable   enable}	Enable or disable the sending of unknown multicast addresses to the CPU.	disable
ip6-mode {dhcp   static}	Set the addressing mode to be static or DHCP. DHCP addressing mode is available only when autoconf is disabled.	static
ip6-dns-server-override {disable   enable}	Enable or disable using the DNS server acquired by DHCP. This command is available only when the ip6-mode is set to dhcp.	enable
dhcp6-information-request {disable   enable}	Enable or disable the DHCPv6 information request.	disable
ip6-send-adv {disable   enable}	Enable or disable the sending of the IPv6 router advertisement. This command is only available when autoconf is disabled.	disable
ip6-manage-flag {disable   enable}	Enable or disable the sending of the IPv6 managed flag.	disable
ip6-other-flag {disable   enable}	Enable or disable the sending of the IPv6 other flag.	disable
ip6-max-interval <4-1800>	Specify the maximum number of seconds before the RA is sent.	600
ip6-min-interval <3-1350>	Specify the minimum number of seconds before the RA is sent.	198
ip6-link-mtu <integer>	Specify the IPv6 link maximum transmission unit.	0
ip6-reachable-time <0-3600000>	Specify the IPv6 reachable time in milliseconds.	0
ip6-retrans-time <0-2147483647>	Specify the IPv6 retransmit time in milliseconds.	0
ip6-default-life <0-9000>	Specify the IPv6 default life in seconds.	1800
ip6-hop-limit <0-255>	Specify the maximum number of IPv6 hops.	0
vrip6_link_local {enable   disable}	Enter the link-local IPv6 address of virtual router.	No default
vrrp-virtual-mac6 {enable   disable}	Enable VRRP virtual MAC addresses for the IPv6 VRRP routers added to this interface. See RFC 5798 for information about the VRRP virtual MAC addresses.	disable

Variable	Description	Default
<b>config ip6-extra-addr</b>		
<prefix_ipv6>	IPv6 address prefix. Configure additional IPv6 prefixes for this IPv6 interface.	No default
<b>config ip6-prefix-list</b>		
<prefix_ipv6>	IPv6 advertised prefix list. Configure which IPv6 prefixes are advertised..	No default
autonomous-flag {disable   enable}	Enable or disable the autonomous flag.	enable
onlink-flag {disable   enable}	Enable or disable the onlink flag.	disable
preferred-life-time <0-2147483647>	Specify the preferred lifetime in seconds for the advertised IPv6 prefix.	604800
valid-life-time <0-2147483647>	Specify the valid lifetime in seconds for the advertised IPv6 prefix.	2592000

## config secondaryip

Configure a second IP address for the interface.

### Syntax

```
config system interface
edit <interface_name>
    config secondaryip
        edit <id>
            set ip <IP_address_and_netmask>
            set allowaccess <access_types>
        end
    end
end
```

Variable	Description	Default
<interface_name>	Edit an existing interface or create a new VLAN interface.	No default
<id>	Identifier.	No default
ip <IP_address_and_netmask>	Enter the IP address and netmask.	0.0.0.0 0.0.0.0
allowaccess <access_types>	Enter the types of management access permitted on this interface or secondary IP address. Valid types are: http https ping radius-acct snmp ssh telnet. Separate each type with a space. To add or remove an option from the list, retype the complete list as required.	No default

## config vrrp

Add one or more VRRP virtual routers to a interface. For information about VRRP, see RFC 5798.

### Syntax

```
config system interface
edit <interface_name>
  config vrrp
    edit <VRID_int>
      set adv-interval <seconds_int>
      set backup-vmac-fwd {enable | disable}
      set preempt {enable | disable}
      set priority <prio_int>
      set start-time <seconds_int>
      set status {enable | disable}
      set version {2 | 3}
      set vrdst <ipv4_addr>
      set vrgrp <integer>
      set vrip <ipv4_addr>
    end
  end
```

Variable	Description	Default
<interface_name>	Edit an existing interface or create a new VLAN interface.	No default
<VRID_int>	VRRP virtual router ID (1 to 255). Identifies the VRRP virtual router.	None
adv-interval <seconds_int>	VRRP advertisement interval (1-255 seconds).	1
backup-vmac-fwd {enable   disable}	Enable or disable whether virtual MAC addresses are forwarded for VRRP backup.	enable
preempt {enable   disable}	Enable or disable VRRP preempt mode. In preempt mode a higher priority backup system can preempt a lower priority master system.	enable
priority <prio_int>	Priority of this virtual router (1-255). The VRRP virtual router on a network with the highest priority becomes the master.	100
start-time <seconds_int>	The startup time of this virtual router (1-255 seconds). The startup time is the maximum time that the backup system waits between receiving advertisement messages from the master system.	3
status {enable   disable}	Enable or disable this virtual router.	enable
version {2   3}	Set the VRRP version to VRRP version 2 or VRRP version 3.	2
vrdst <ipv4_addr>	Monitor the route to this destination.	0.0.0.0
vrgrp <integer>	VRRP group identifier. The value range is 1-65535.	0
vrip <ipv4_addr>	IP address of the virtual router.	0.0.0.0

## Example

This example shows how to configure VRRP:

```
config system interface
  edit "vlan-8"
    set ip 10.10.10.1 255.255.255.0
    set allowaccess ping https http ssh
    set vrrp-virtual-mac enable
    config vrrp
      edit 5
        set priority 255
        set vrgrp 50
        set vrip 11.1.1.100
      next
      edit 6
        set priority 200
        set vrgrp 50
        set vrip 11.1.1.100
      next
      edit 7
        set priority 150
        set vrgrp 50
        set vrip 11.1.1.100
      next
    end
    set snmp-index 20
    set vlanid 8
    set interface "internal"
  next
end
```

## config system ipv6-neighbor-cache

Use this command to configure the IPv6 neighbor cache table:

```
config system ipv6-neighbor-cache
  edit <id>
    set interface {<string> | internal | mgmt}
    set ipv6 <IPv6_address>
    set mac <MAC_address>
  end
```

Variable	Description	Default
<id>	Enter a unique integer to create a new entry.	No default
interface <interface_name>	Required. Enter the interface.	No default
ipv6 <IPv6_address>	Enter the IPv6 addresss in the following format:  xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx	::
mac <MAC_address>	Enter the MAC address in the following format:	00:00:00:00:00:00

Variable	Description	Default
	XX:XX:XX:XX:XX:XX	

## Example

This example shows how to configure an entry in the IPv6 neighbor cache table.

```
config system ipv6-neighbor-cache
  edit id
    set interface internal
    set ipv6 e80::a5b:eff:fef1:95e4
    set mac 00:21:cc:d2:76:72
  end
```

## config system link-monitor

Use this command to configure the link health monitor.

```
config system link-monitor
  edit <link monitor name>
    set addr-mode {ipv4 | ipv6}
    set srcintf <string>
    set protocol {arp | ping}
    set gateway-ip <IPv4 address>
    set gateway-ip6 <IPv6 address>
    set source-ip <IPv4 address>
    set source-ip6 <IPv6 address>
    set interval <integer>
    set timeout <integer>
    set failtime <integer>
    set recoverytime <integer>
    set update-static-route {enable | disable}
    set status {enable | disable}
  next
end
```

Variable	Description	Default
<link monitor name>	Enter the link monitor name.	No default
addr-mode {ipv4   ipv6}	Select whether to use IPv4 or IPv6 addresses.	ipv4
srcintf <string>	Interface where the monitor traffic is sent.	No default
protocol {arp   ping}	Protocols used to detect the server. Select ARP or ping.	arp
gateway-ip <IPv4 address>	Gateway IPv4 address used to PING the server. This option is available only when <code>addr-mode</code> is set to <code>ipv4</code> .	0.0.0.0
gateway-ip6 <IPv6 address>	Gateway IPv6 address used to PING the server. This option is available only when <code>addr-mode</code> is set to <code>ipv6</code> .	No default
source-ip <IPv4 address>	Source IPv4 address used in packet to the server. This option is available only when <code>addr-mode</code> is set to <code>ipv4</code> .	0.0.0.0

Variable	Description	Default
source-ip6 <IPv6 address>	Source IPv6 address used in packet to the server. This option is available only when <code>addr-mode</code> is set to <code>ipv6</code> .	No default
interval <integer>	Detection interval in seconds. The range is 1-3600.	5
timeout <integer>	Detect request timeout in seconds. The range is 1-255.	1
failtime <integer>	Number of retry attempts before bringing server down. The range is 1-10.	5
recoverytime <integer>	Number of retry attempts before bringing server up. The range is 1-10.	5
update-static-route {enable   disable}	Enable or disable update static route.	enable
status {enable   disable}	Enable or disable link monitor administrative status.	enable

## config system location

Use this command to configure the location table used by LLDP-MED for enhanced 911 emergency calls.

```
config system location
  edit <name>
    config address-civic
      set additional <string>
      set additional-code <string>
      set block <string>
      set branch-road <string>
      set building <string>
      set city <string>
      set city-division <string>
      set country <string>
      set country-subdivision <string>
      set county <string>
      set direction <string>
      set floor <string>
      set landmark <string>
      set language <string>
      set name <string>
      set number <string>
      set number-suffix <string>
      set place-type <string>
      set post-office-box <string>
      set postal-community <string>
      set primary-road <string>
      set road-section <string>
      set room <string>
      set script <string>
      set seat <string>
      set street <string>
      set street-name-post-mod <string>
      set street-name-pre-mod <string>
```



```

    set street-suffix <string>
    set sub-branch-road <string>
    set trailing-str-suffix <string>
    set unit <string>
    set zip <string>
end
config coordinates
    set altitude <string>
    set altitude-unit {f | m}
    set datum {NAD83 | NAD83/MLLW | WGS84}
    set latitude <string>
    set longitude <string>
end
config elin-number
    set elin-number <number>
end

```

Variable	Description	Default
<name>	Enter a unique name for the location entry.	No default
<b>config address-civic</b>		
additional <string>	Enter additional location information, for example, west wing.	No default
additional-code <string>	Enter the additional country-specific code for the location. In Japan, use the Japan Industry Standard (JIS) address code.	No default
block <string>	Enter the neighborhood (Korea) or block.	No default
branch-road <string>	Enter the branch road name. This value is used when side streets do not have unique names so that both the primary road and side street are used to identify the correct road.	No default
building <string>	Enter the name of the building (structure) if the address includes more than one building, for example, Law Library.	No default
city <string>	Enter the city (Germany), township, or shi (Japan).	No default
city-division <string>	Enter the city division, borough, city district (Germany), ward, or chou (Japan).	No default
country <string>	Enter the two-letter ISO 3166 country code in capital ASCII letters, for example, US, CA, DK, and DE.	No default
country-subdivision <string>	Enter the national subdivision (such as state, canton, region, province, or prefecture). In Canada, the subdivision is province. In Germany, the subdivision is state. In Japan, the subdivision is metropolis. In Korea, the subdivision is province. In the United States, the subdivision is state.	No default

Variable	Description	Default
county <string>	Enter the county (Canada, Germany, Korea, and United States), parish, gun (Japan), or district (India).	No default
direction <string>	Enter N, E, S, W, NE, NW, SE, or SW for the leading street direction.	No default
floor <string>	Enter the floor number, for example, 4.	No default
landmark <string>	Enter the nickname, landmark, or vanity address, for example, UC Berkeley.	No default
language <string>	Enter the ISO 639 language code used for the address information.	No default
name <string>	Enter the person or organization associated with the address, for example, Fortinet or Textures Beauty Salon.	No default
number <string>	Enter the street address, for example, 1560.	No default
number-suffix <string>	Enter any modifier to the street address. For example, if the full street address is 1560A, enter 1560 for the number and A for the number-suffix.	No default
place-type <string>	Enter the type of place, for example, home, office, or street.	No default
post-office-box <string>	Enter the post office box, for example, P.O. Box 1543. When the post-office-box value is set, the street address components are replaced with this value.	No default
postal-community <string>	Enter the postal community name, for example, Alviso. When the postal-community name is set, the civic community name is replaced by this value.	No default
primary-road <string>	Enter the primary road or street name for the address.	No default
road-section <string>	Enter the specific section or stretch of a primary road. This field is used when the same street number appears more than once on the primary road.	No default
room <string>	Enter the room number, for example, 7A.	No default
script <string>	Enter the script used to present the address information, for example, Latn.	No default
seat <string>	Enter the seat number in a stadium or theater or a cubicle number in an office or a booth in a trade show.	No default
street <string>	Enter the street (Canada, Germany, Korea, and United States).	No default

Variable	Description	Default
street-name-post-mod <string>	Enter an optional part of the street name that appears after the actual street name. If the full street name is <code>East End Avenue Extended</code> , the <code>street-name-post-mod</code> is <code>Extended</code> .	No default
street-name-pre-mod <string>	Enter an optional part of the street name that appears before the actual street name. If the full street name is <code>Old North First Street</code> , the <code>street-name-pre-mod</code> is <code>Old</code> .	No default
street-suffix <string>	Enter the type of street, for example, Ave or Place. Valid values are listed in the United States Postal Service Publication 28 [18], Appendix C.	No default
sub-branch-road <string>	Enter the name of a street that branches off of a branch road. This value is used when the primary road, branch road, and subbranch road names are needed to identify the correct street.	No default
trailing-str-suffix <string>	Enter N, E, S, W, NE, NW, SE, or SW for the trailing street direction.	No default
unit <string>	Enter the unit (apartment or suite), for example, Apt 27.	No default
zip <string>	Enter the postal or zip code for the address, for example, 94089-1345.	No default
<b>config coordinates</b>		
altitude <string>	Enter the vertical height of a location using the altitude-unit to specify the unit used. The format is +/- floating point number, for example, 117.47.	No default
altitude-unit {f   m}	Select whether the altitude is measured in m (meters) or f (floors).	m
datum {NAD83   NAD83/MLLW   WGS84}	Select which map is used for the location: WGS84, NAD83, or NAD83/MLLW.	WGS84
latitude <string>	Enter the latitude. The format is floating point starting with +/- or ending with N/S, for example, +/-16.67 or 16.67N.	No default
longitude <string>	Enter the longitude. The format is floating point starting with +/- or ending with E/W, for example, +/-26.789 or 26.789E.	No default
<b>config elin-number</b>		
elin-number <number>	Enter the emergency location identification number (ELIN), which is a unique phone number. The value is a 10 to 20 byte numerical string.	No default

## Example

This example shows how to configure the location table for Fortinet.

```
config system location
  edit Fortinet
    config address-civic
      set country "US"
      set language "English"
      set county "Santa Clara"
      set city "Sunnyvale"
      set street "Kifer"
      set street-suffix "Road"
      set number "899"
      set zip "94086"
      set building "1"
      set floor "1"
      set seat "1293"
    end
  next
  edit "Fortinet"
    config elin-number
      set elin-number "14082357700"
    end
  end
end
```

## config system ntp

Use this command to configure Network Time Protocol (NTP) servers.

### Syntax

```
config system ntp
  set allow-unsync-source {enable | disable}
  set authentication {enable | disable}
  set log-time-adjustments {enable | disable}
  set ntpsync {enable | disable}
  set source-ip <ipv4_addr>
  set source-ip6 <ipv6_addr>
  set syncinterval <interval_int>
  config ntpserver
    edit <serverid_int>
      set authentication {enable | disable}
      set key <string>
      set key-id <integer>
      set ntpv3 {enable | disable}
      set server {<ipv4_addr>| <ipv6_addr>}
    end
  end
end
```

Variable	Description	Default
allow-unsync-source {enable   disable}	Enable or disable whether an unsynchronized NTP server source is allowed.	disable

Variable	Description	Default
authentication {enable   disable}	Enable or disable authentication.	disable
log-time-adjustments {enable   disable}	Enable or disable whether FortiSwitch logs when NTP adjusts the system time.	enable
ntpsync {enable   disable}	Enable or disable whether the system time is synchronized with the NTP server.	enable
source-ip <ipv4_addr>	Enter the source IPv4 address for communication with the NTP server.	0.0.0.0
source-ip6 <ipv6_addr>	Enter the source IPv6 address for communication with the NTP server.	No default
syncinterval <interval_int>	Enter the interval in minutes between contacting the NTP server to synchronize time. The range is from 1 to 1,440 minutes. This option is available only when <code>ntpsync</code> is enabled.	10
<serverid_int>	Enter the number for this NTP server entry.	No default
authentication {enable   disable}	Enable or disable authentication. If you enable authentication and use the NTPv3 protocol, MD5 authentication is used. If you enable authentication and use the NTPv4 protocol, SHA1 authentication is used.	disable
key <string>	If authentication is enabled, enter a key for authentication.	No default
key-id <integer>	If authentication is enabled, enter a key identifier for authentication.	0
ntp3 {enable   disable}	Enable this option to use the NTPv3 protocol. Disable this option to use the NTPv4 protocol.	disable
server {<ipv4_addr>   <ipv6_addr>}	Enter the IPv4 or IPv6 address for this NTP server.	No default

## Example

This example shows how to configure an NTP server:

```
config system ntp
    set authentication enable
    set ntpsyn enable
    set syncinterval 5
    set source-ip 192.168.4.5
end
```

## config system password-policy

Use this command to configure higher security requirements for administrator passwords and IPsec VPN pre-shared keys.

## Syntax

```
config system password-policy
  set status enable
  set apply-to [admin-password ipsec-preshared-key]
  set change-4-characters {enable | disable}
  set minimum-length <chars>
  set min-lower-case-letter <num_int>
  set min-upper-case-letter <num_int>
  set min-non-alphanumeric <num_int>
  set min-number <num_int>
  set expire-status {enable | disable}
  set expire-day <num_int>
end
```

Variable	Description	Default
status enable	Enable password policy. The password policy cannot be disabled.	enable
apply-to [admin-password ipsec-preshared-key]	Select where the policy applies: administrator passwords or IPSec preshared keys. This option is available only when <code>status</code> is enabled.	admin-password
change-4-characters {enable   disable}	Enable to require the new password to differ from the old password by at least four characters. This option is available only when <code>status</code> is enabled.	disable
minimum-length <chars>	Set the minimum length of password in characters. Range 8 to 32. This option is available only when <code>status</code> is enabled.	8
min-lower-case-letter <num_int>	Enter the minimum number of required lower case letters in every password. This option is available only when <code>status</code> is enabled.	0
min-upper-case-letter <num_int>	Enter the minimum number of required upper case letters in every password. This option is available only when <code>status</code> is enabled.	0
min-non-alphanumeric <num_int>	Enter the minimum number of required non-alphanumeric characters in every password. This option is available only when <code>status</code> is enabled.	0
min-number <num_int>	Enter the minimum number of number characters required in every password. This option is available only when <code>status</code> is enabled.	0
expire-status {enable   disable}	Enable to have passwords expire. This option is available only when <code>status</code> is enabled.	enable
expire-day <num_int>	Enter the number of days before the current password is expired and the user will be required to change their password. This option is available only when <code>status</code> is enabled and <code>expire-status</code> is enabled.	90

## Example

This example shows how to configure a password policy for administrator passwords:

```
config system password-policy
    set status enable
    set apply-to admin-password
    set change-4-characters enable
    set minimum-length 10
    set min-lower-case-letter 1
    set min-upper-case-letter 1
    set min-non-alphanumeric 1
    set min-number 1
    set expire-status enable
    set expire-day 30
end
```

## config system schedule group

Use this command to define a schedule group. A schedule group can contain both one-time schedules and recurring schedules. To create one-time and recurring schedules, see [config system schedule onetime on page 215](#) and [config system schedule recurring on page 216](#).

### Syntax

```
config system schedule group
    edit <schedule_group_name>
        set member <schedule_name1> <schedule_name2> ...
    end
```

Variable	Description	Default
<schedule_group_name>	Enter the name of the schedule group.	No default
member <schedule_name1> <schedule_name2> ...	Enter the names of the schedules to include. Separate multiple names with a space.  The schedules must already be defined with the <a href="#">config system schedule onetime</a> or <a href="#">config system schedule recurring</a> command.	No default

## Example

This example shows how to create a schedule group:

```
config system schedule group
    edit group1
        set member schedule1 schedule2
    end
```

## config system schedule onetime

Use this command to define a one-time schedule for when a policy will be enforced.

## Syntax

```
config system schedule onetime
  edit <schedule_name>
    set start <time_date>
    set end <time_date>
  end
```

Variable	Description	Default
<schedule_name>	Enter the name of the schedule.	No default
start <time_date>	Enter the start time and date for the schedule in the following format: hh:mm yyyy/mm/dd	00:00 1900/01/01
end <time_date>	Enter the end time and date for the schedule in the following format: hh:mm yyyy/mm/dd	00:00 1900/01/01

## Example

This example shows how to create a one-time schedule:

```
config system schedule onetime
  edit schedule1
    set start 07:00 2019/03/22
    set end 07:00 2019/03/29
  end
```

## config system schedule recurring

Use this command to define a schedule for specified hours every week.

## Syntax

```
config system schedule recurring
  edit <schedule_name>
    set day {monday | tuesday | wednesday | thursday | friday | saturday | sunday}
    set start <time>
    set end <time>
  end
```

Variable	Description	Default
<schedule_name>	Enter the name of the schedule.	No default
day {monday   tuesday   wednesday   thursday   friday   saturday   sunday}	Enter one or more days for the ACL to be enforced. Separate days with a space.	monday tuesday wednesday thursday friday
start <time>	Enter the start time for the schedule in the following format: hh:mm	24:00
end <time>	Enter the end time for the schedule in the following format: hh:mm	24:00



### Example

This example shows how to create a recurring schedule:

```
config system schedule recurring
edit schedule2
    set day monday wednesday friday
    set start 07:00
    set end 08:00
end
```

## config system settings

Use this comand to configure equal cost multi-path (ECMP) routing.

ECMP is a forwarding mechanism that enables load-sharing of traffic to multiple paths of equal cost. An ECMP set is formed when the routing table contains multiple next-hop address for the same destination with equal cost. Routes of equal cost have the same preference and metric value. If there is an ECMP set for an active route, the switch uses a hash algorithm to choose one of the next-hop addresses. As input to the hash, the switch uses one or more of the following fields in the packet to be routed:

- Source IP
- Destination IP
- Input port

### Syntax

```
config system settings
    set ip-ecmp-mode {source-ip-based | dst-ip-based | port-based}
end
```

Variable	Description	Default
ip-ecmp-mode {source-ip-based   dst-ip-based   port-based}	Select the IPv4 ECMP mode: <ul style="list-style-type: none"><li>• <code>dst-ip-based</code> — Select the next hop based on the destination IP address.</li><li>• <code>port-based</code> — Select the next hop based on the TCP/UDP port.</li><li>• <code>source-ip-based</code> — Select the next hop based on the source IP address.</li></ul>	source-ip-based

### Example

This example shows how to configure ECMP:

```
config system settings
    set ip-ecmp-mode port-based
end
```

## config system sflow

Use this command to add or change the IP address and UDP port that FortiSwitch sFlow agents use to send sFlow datagrams to sFlow collectors.

sFlow is a network monitoring protocol described in <http://www.sflow.org>. FortiSwitch implements sFlow version 5. You can configure one or more FortiSwitch interfaces as sFlow agents that monitor network traffic and send sFlow datagrams containing information about traffic flow to sFlow collectors.

sFlow is normally used to provide an overall traffic flow picture of your network. You would usually operate sFlow agents on switches, routers, and firewall on your network, collect traffic data from all of them and use collectors to show traffic flows and patterns.

### Syntax

```
config system sflow
  config collectors
    edit <collector_name>
      set ip <collector_IPv4_address>
      set port <collector_port>
    next
  end
end
```

Variable	Description	Default
<collector_name>	Enter a name for the sFlow collector.	No default
ip <collector_IPv4_address>	The sFlow agents send sFlow datagrams to the sFlow collector at this IPv4 address.	0.0.0.0
port <collector_port>	The UDP port number used for sending sFlow datagrams. Change this setting only if required by your sFlow collector or your network configuration. The value range is 0-65535.	6343

### Example

This example shows how to configure sFlow:

```
config system sflow
  config collectors
    edit collector1
      set ip 20.20.20.0
      set port 200
    next
  end
end
```

## config system sniffer-profile

Use this command to define a packet-capture profile to select which packets to examine. To start, stop, and pause the packet capture, see the `execute system sniffer-profile` commands.

## Syntax

```
config system sniffer-profile
  edit <profile_name>
    set filter {<string> | none}
    set max-pkt-count <1-maximum>
    set max-pkt-len <64-1534>
    set switch-interface <switch_interface_name>
    set system-interface <system_interface_name>
  end
```

Variable	Description	Default
<profile_name>	The name of the packet-capture profile.	No default
filter {<string>   none}	Enter <code>none</code> or enter the filter for selecting which packets to capture. For example, if you want packets using UDP port 1812 between hosts named <code>forti1</code> and either <code>forti2</code> or <code>forti3</code> :  'udp and port 1812 and host forti1 and \( forti2 or forti3 \)'	none
max-pkt-count <1-maximum>	Enter how many packets to be captured on the selected interface. The maximum number of packets that can be captured differs according to platform. See the <i>FortiSwitchOS Administration Guide</i> for details.	4000
max-pkt-len <64-1534>	Enter the maximum packet length in bytes to be captured on the interface.	128
switch-interface <switch_interface_name>	Enter the switch interface name that you want to capture packets on. You cannot select both a switch interface and a system interface.	No default
system-interface <system_interface_name>	Enter the system interface name that you want to capture packets on. You cannot select both a switch interface and a system interface.	No default

## Example

This example shows how to create a packet-capture profile:

```
config system sniffer-profile
  edit profile1
    set filter none
    set max-pkt-count 100
    set max-pkt-len 100
    set system-interface mgmt
  end
```

## config system snmp community

Use this command to configure SNMP communities on your FortiSwitch unit. You add SNMP communities so that SNMP managers can connect to the system to view system information and receive SNMP traps. SNMP traps are triggered

when system events occur.

You can add up to three SNMP communities. Each community can have a different configuration for SNMP queries and traps. Each community can be configured to monitor the system for a different set of events. You can also add IP addresses of up to 8 SNMP managers for each community.



When you configure an SNMP manager, ensure that you list it as a host in a community on the FortiSwitch that it will be monitoring. Otherwise, the SNMP monitor will not receive any traps from that FortiSwitch unit, and will not be able to query it.

## Syntax

```
config system snmp community
  edit <index_number>
    set events <events_list>
    set name <community_name>
    set query-v1-port <port_number>
    set query-v1-status {enable | disable}
    set query-v2c-port <port_number>
    set query-v2c-status {enable | disable}
    set status {enable | disable}
    set trap-v1-lport <port_number>
    set trap-v1-rport <port_number>
    set trap-v1-status {enable | disable}
    set trap-v2c-lport <port_number>
    set trap-v2c-rport <port_number>
    set trap-v2c-status {enable | disable}
  config hosts
    edit <host_number>
      set interface <if_name>
      set ip <address_ipv4>
      set source-ip <address_ipv4/mask>
    end
  config hosts6
    edit <host_number>
      set interface <if_name>
      set ip6 <address_ipv6>
      set source-ip6 <address_ipv6>
    end
  end
end
```

Variable	Description	Default
<index_number>	Enter the index number of the community in the SNMP communities table. Enter an unused index number to create a new SNMP community.	No default

Variable	Description	Default
events <events_list>	Enable the events for which the system should send traps to the SNMP managers in this community. The following events can be enabled: <ul style="list-style-type: none"> <li>• cpu-high—CPU usage too high.</li> <li>• ent-conf-change—Entity configuration change (RFC 4133).</li> <li>• intf-ip—Interface IP address changed.</li> <li>• llv—Learning-limit violation.</li> <li>• log-full—Available log space is low.</li> <li>• mem-low—Available memory is low.</li> </ul>	All events enabled.
name <community_name>	Enter the name of the SNMP community.	No default
query-v1-port <port_number>	Enter the SNMP v1 query port number used for SNMP manager queries.	161
query-v1-status {enable   disable}	Enable or disable SNMP v1 queries for this SNMP community.	enable
query-v2c-port <port_number>	Enter the SNMP v2c query port number used for SNMP manager queries.	161
query-v2c-status {enable   disable}	Enable or disable SNMP v2c queries for this SNMP community.	enable
status {enable   disable}	Enable or disable the SNMP community.	enable
trap-v1-lport <port_number>	Enter the SNMP v1 local port number used for sending traps to the SNMP managers.	162
trap-v1-rport <port_number>	Enter the SNMP v1 remote port number used for sending traps to the SNMP managers.	162
trap-v1-status {enable   disable}	Enable or disable SNMP v1 traps for this SNMP community.	enable
trap-v2c-lport <port_number>	Enter the SNMP v2c local port number used for sending traps to the SNMP managers.	162
trap-v2c-rport <port_number>	Enter the SNMP v2c remote port number used for sending traps to the SNMP managers.	162
trap-v2c-status {enable   disable}	Enable or disable SNMP v2c traps for this SNMP community.	enable
<b>config hosts and hosts6</b>		
<host_number>	Enter the index number of the host in the table. Enter an unused index number to create a new host.	No Default
interface <if_name>	Enter the name of the FortiSwitch interface to which the SNMP manager connects.	No default
ip <address_ipv4>	Enter the IPv4 IP address of the SNMP manager (for <code>hosts</code> ).	0.0.0.0

Variable	Description	Default
ip6 <address_ipv6>	Enter the IPv6 IP address of the SNMP manager (for <code>hosts6</code> ).	::
source-ip <address_ipv4/mask>	Enter the source IPv4 IP address for SNMP traps sent by the FortiSwitch (for <code>hosts</code> ).	0.0.0.0/ 0.0.0.0
source-ip6 <address_ipv6>	Enter the source IPv6 IP address for SNMP traps sent by the FortiSwitch (for <code>hosts6</code> ).	::

## config system snmp sysinfo

Use this command to enable the FortiSwitch SNMP agent and to enter basic system information used by the SNMP agent. Enter information about the system to identify it. When your SNMP manager receives traps from this FortiSwitch unit, you will know which system sent the information. Some SNMP traps indicate high CPU usage, log full, or low memory.

### Syntax

```
config system snmp sysinfo
    set contact-info <info_str>
    set description <description>
    set engine-id <engine-id_str>
    set location <location>
    set status {enable | disable}
    set trap-high-cpu-threshold <percentage>
    set trap-log-full-threshold <percentage>
    set trap-low-memory-threshold <percentage>
    set trap-temp-alarm-threshold <temperature in degrees Celsius>
    set trap-temp-warning-threshold <temperature in degrees Celsius>
end
```

Variable	Description	Default
contact-info <info_str>	Add the contact information for the person responsible for this FortiSwitch unit. The contact information can be up to 35 characters long.	No default
description <description>	Add a name or description of the system. The description can be up to 35 characters long.	No default
engine-id <engine-id_str>	Each SNMP engine maintains a value, <code>snmpEngineID</code> , which uniquely identifies the SNMP engine. This value is included in each message sent to or from the SNMP engine. In FortiOS, the <code>snmpEngineID</code> is composed of two parts: <ul style="list-style-type: none"> <li>Fortinet prefix 0x8000304404</li> <li>the optional engine-id string, 24 characters maximum, defined in this command</li> </ul> Optionally, enter an engine-id value.	No default
location <location>	Describe the physical location of the system. The system location description can be up to 35 characters long.	No default

Variable	Description	Default
status {enable   disable}	Enable or disable the FortiSwitch SNMP agent.	disable
trap-high-cpu-threshold <percentage>	Enter the percentage of CPU used that will trigger the threshold SNMP trap for the high-cpu.  There is some smoothing of the high CPU trap to ensure the CPU usage is constant rather than a momentary spike. This feature prevents frequent and unnecessary traps.	80
trap-log-full-threshold <percentage>	Enter the percentage of disk space used that will trigger the threshold SNMP trap for the log-full.	90
trap-low-memory-threshold <percentage>	Enter the percentage of memory used that will be the threshold SNMP trap for the low-memory.	80
trap-temp-alarm-threshold <temperature in degrees Celsius>	Set an alarm for when the system temperature reaches the specified temperature.	60
trap-temp-warning-threshold <temperature in degrees Celsius>	Set a warning for when the system temperature reaches the specified temperature. The warning threshold must be lower than the alarm threshold.	50

## Example

This example shows how to set a warning and an alarm for specified system temperatures:

```
config system snmp sysinfo
    set status enable
    set trap-temp-alarm-threshold 80
    set trap-temp-warning-threshold 70
end
```

## config system snmp user

Use this command to configure an SNMP user including which SNMP events the user wants to be notified about, which hosts will be notified, and if queries are enabled which port to listen on for them.

FortiSwitchOS implements the user security model of RFC 3414. You can require the user to authenticate with a password and you can use encryption to protect the communication with the user.

## Syntax

```
config system snmp user
    edit <user_name>
        set auth-proto {md5 | sha1 | sha224 | sha256 | sha384 | sha512}
        set auth-pwd <password>
        set events {cpu-high ent-conf-change intf-ip log-full mem-low}
        set notify-hosts <IP_address>
        set priv-proto {aes128 | aes192 | aes192c | aes256 | aes256c | des}
        set priv-pwd <password>
        set queries {enable | disable}
        set query-port <port_int>
```

```

    set security-level {no-auth-no-priv | auth-no-priv | auth-priv}
end

```

Variable	Description	Default
<user_name>	Edit or add selected user.	No default
auth-proto {md5   sha1   sha224   sha256   sha384   sha512}	Select the authentication protocol. <ul style="list-style-type: none"> <li>md5—HMAC-MD5-96 authentication protocol</li> <li>sha1—HMAC-SHA-1 authentication protocol</li> <li>sha224—HMAC-SHA-224 authentication protocol</li> <li>sha256—HMAC-SHA-256 authentication protocol</li> <li>sha384—HMAC-SHA-384 authentication protocol</li> <li>sha512—HMAC-SHA-512 authentication protocol</li> </ul> This option is available only when <code>security-level</code> is set to <code>auth-priv</code> or <code>auth-no-priv</code> .	sha1
auth-pwd <password>	Enter the password for the authentication protocol. This option is available only when <code>security-level</code> is set to <code>auth-priv</code> or <code>auth-no-priv</code> .	No default
events {cpu-high ent-conf-change intf-ip log-full mem-low}	Specify one or more SNMP notifications (traps) to send. Separate multiple values with a space. The following notifications are available: <ul style="list-style-type: none"> <li>cpu-high—The CPU usage is too high.</li> <li>ent-conf-change—The configuration of an entity was changed (refer to RFC 4133).</li> <li>intf-ip—The IP address for an interface was changed.</li> <li>log-full—The available log space is low.</li> <li>mem-low—The available memory is low.</li> </ul>	cpu-high mem-low log-full intf-ip ent-conf-change
notify-hosts <IP_address>	Specify one or more IPv4 addresses to send notifications (traps) to.	No default
priv-proto {aes128   aes192   aes192c   aes256   aes256c   des}	Select the encryption protocol. <ul style="list-style-type: none"> <li>aes128—CFB128-AES-128 symmetric encryption protocol</li> <li>aes192—CFB128-AES-192 symmetric encryption protocol</li> <li>aes192c—CFB128-AES-192-C symmetric encryption protocol (required for certain clients)</li> <li>aes256—CFB128-AES-256 symmetric encryption protocol</li> <li>aes256c—CFB128-AES-256-C symmetric encryption protocol (required for certain clients)</li> <li>des—CBC-DES symmetric encryption protocol</li> </ul> This option is available only when <code>security-level</code> is set to <code>auth-priv</code> .	aes128
priv-pwd <password>	Enter the password for the encryption protocol. This option is available only when <code>security-level</code> is set to <code>auth-priv</code> .	No default



Variable	Description	Default
queries {enable   disable}	Enable or disable SNMP v3 queries for this user. Queries are used to determine the status of SNMP variables.	enable
query-port <port_int>	Enter the number of the port used for SNMP v3 queries. If multiple versions of SNMP are being supported, each version should listen on a different port.	161
security-level {no-auth-no-priv   auth-no-priv   auth-priv}	Set the security level to one of: <ul style="list-style-type: none"> <li>no-auth-no-priv—no authentication or privacy</li> <li>auth-no-priv—authentication but no privacy</li> <li>auth-priv—authentication and privacy</li> </ul>	no-auth-no-priv

## config system web

Use this command to configure web attributes.

### Syntax

```
config system web
    set gui-language {browser | english | french | german | japanese | korean | portuguese |
        simch | spanish | trach}
    set http-port <1-65535>
    set https-pki-required {enable | disable}
    set https-port <1-65535>
    set https-server-cert {self-sign | Fortinet_802.1x | Fortinet_Factory | Fortinet_Factory2
        | Fortinet_Firmware}
    set https-ssl-versions {tlsv1-1 | tlsv1-2 | tlsv1-3}
end
```

Variable	Description	Default
gui-language {browser   english   french   german   japanese   korean   portuguese   simch   spanish   trach}	Set the display language to the language used in the browser (browser), English, French, German, Japanese, Korean, Portuguese, simplified Chinese (simch), Spanish, or traditional Chinese(trach).	browser
http-port <1-65535>	Enter the port to use for HTTP administrative access.	80
https-pki-required {enable   disable}	Enable to allow users to log in by providing a valid certificate if PKI is enabled for HTTPS administrative access. The default setting of disable allows admin users to log in by providing a valid certificate or password.	disable
https-port <1-65535>	Enter the port to use for HTTPS administrative access.	443
https-server-cert {self-sign   Fortinet_802.1x   Fortinet_Factory   Fortinet_Factory2   Fortinet_Firmware}	Select the administration HTTPS server certificate to use: <ul style="list-style-type: none"> <li>self-sign—Use a self-signed security certificate. Self-signed certificates are free and will encrypt the data just as securely as a purchased certificate. Self-signed certificates, however, are not likely to be recognized by the CA certificate store so will be considered by any checks</li> </ul>	Fortinet_Firmware

Variable	Description	Default
	<p>against that store as invalid.</p> <ul style="list-style-type: none"> <li>Fortinet_802.1x—This certificate is embedded in the firmware and is the same on every unit (not unique). It has been signed by a public CA.</li> <li>Fortinet_Factory—This certificate is embedded in the hardware at the factory and is unique to this unit. It has been signed by a proper CA.</li> <li>Fortinet_Factory2—This certificate is embedded in the hardware at the factory and is unique to this unit. It has been signed by a proper CA.</li> <li>Fortinet_Firmware—This certificate is embedded in the firmware and is the same on every unit (not unique). It has been signed by a proper CA. It is not recommended to use it for server-type functionality since any other unit could use this same certificate to spoof the identity of this unit.</li> </ul>	
https-ssl-versions {tlsv1-1   tlsv1-2   tlsv1-3}	<p>Set the allowed SSL/TLS versions for web administration.</p> <p><b>NOTE:</b> TLS 1.3 is not supported in FIPS mode.</p>	tlsv1-1 tlsv1-2 tlsv1-3

## config user

The `config user` commands provide configuration of user accounts and user groups for firewall policy authentication, administrator authentication, and some types of VPN authentication:

- [config user group on page 226](#)
- [config user ldap on page 227](#)
- [config user local on page 229](#)
- [config user peer on page 230](#)
- [config user peergrp on page 231](#)
- [config user radius on page 232](#)
- [config user setting on page 236](#)
- [config user tacacs+ on page 237](#)

## config user group

Use this command to add or edit user groups.

### Syntax

```
config user group
  edit <group_name>
    set group-type <grp_type>
    set authtimeout <timeout>
    set http-digest-realm <attribute>
```

```

    set member <names>
    config match
        edit <match_id>
            set group-name <gname_str>
            set server-name <srvname_str>
        end
    end
end

```

Variable	Description	Default
<group_name>	Enter a new name to create a new group or enter an existing group name to edit that group.	No default
group-type <grp_type>	Enter the group type. <grp_type> determines the type of users and is one of the following: <ul style="list-style-type: none"> <li>firewall - FortiSwitch users defined in user local, user ldap or user radius</li> <li>fsso-service - Directory Service users</li> </ul>	firewall
authtimeout <timeout>	Set the authentication timeout for the user group, range 1 to 480 minutes. If set to 0, the global authentication timeout value is used.	0
http-digest-realm <attribute>	Enter the realm attribute for MD5-digest authentication	No default
member <names>	Enter the names of users, peers, LDAP servers, or RADIUS servers to add to the user group. Separate the names with spaces. To add or remove names from the group you must re-enter the whole list with the additions or deletions required.	No default
<b>config match</b>		
<match_id>	Enter an ID for the entry.	No default
group-name <gname_str>	The name of the matching group on the remote authentication server. Specify the user group names on the authentication servers that are members of this FortiSwitch user group. If no matches are specified, all users on the server can authenticate.	No default
server-name <srvname_str>	The name of the remote authentication server.	No default

## Example

This example shows how to create a user group:

```

config user group
    edit "Radius_group"
        set member "FortiAuthenticator"
    end
end

```

## config user ldap

Use this command to add or edit the definition of an LDAP server for user authentication.

To authenticate with the FortiSwitch unit, the user enters a user name and password. The system sends this user name and password to the LDAP server. If the LDAP server can authenticate the user, the user is successfully authenticated with the FortiSwitch unit. If the LDAP server cannot authenticate the user, the connection is refused by the FortiSwitch unit.

## Syntax

```
config user ldap
edit <server_name>
    set cnid <id>
    set dn <dn>
    set group-member-check {user-attr | group-object}
    set member-attr <attr_name>
    set port <number>
    set server <domain>
    set type <auth_type>
        set username <ldap_username>
        set password <ldap_passwd>
    set password-expiry-warning {disable | enable}
    set password-renewal {disable | enable}
    set secure <auth_port>
end
```

Variable	Description	Default
<server_name>	Enter a name to identify the LDAP server. Enter a new name to create a new server definition or enter an existing server name to edit that server definition.	No default
cnid <id>	Enter the common name identifier for the LDAP server. The common name identifier for most LDAP servers is cn. However some servers use other common name identifiers such as uid. Maximum 20 characters.	cn
dn <dn>	Enter the distinguished name used to look up entries on the LDAP server. It reflects the hierarchy of LDAP database object classes above the Common Name Identifier. The FortiSwitch passes this distinguished name unchanged to the server. You must provide a dn value if type is simple. Maximum 512 characters.	No default
group-member-check {user-attr   group-object}	Select the group membership checking method: user attribute or group object.	user-attr
member-attr <attr_name>	An attribute of the group that is used to authenticate users.	No default
port <number>	Enter the port number for communication with the LDAP server.	389
server <domain>	Enter the LDAP server domain name or IP address.	No default
type <auth_type>	Enter the authentication type for LDAP searches. One of: anonymous, regular or simple See the notes following the table for additional information.	simple

Variable	Description	Default
username <ldap_username>	This field is available only if <code>type</code> is <code>regular</code> . For regular authentication, you need a user name and password. See your server administrator for more information.	No default
password <ldap_passwd>	This field is available only if <code>type</code> is <code>regular</code> . For regular authentication, you need a user name and password. See your server administrator for more information.	No default
password-expiry-warning {disable   enable}	Enable or disable password expiry warnings.	disable
password-renewal {disable   enable}	Enable or disable online password renewal.	disable
secure <auth_port>{disable   starttls   ldaps}	Select the port to be used in authentication: <ul style="list-style-type: none"> <li>• <code>disable</code> — port 389</li> <li>• <code>ldaps</code> — port 636</li> <li>• <code>starttls</code> — port 389</li> </ul>	disable

## Notes on Authentication Type

The following are the authentication types for LDAP searches:

- `anonymous`—bind using anonymous user search
- `regular`—bind using user name and password and then search
- `simple`—simple password authentication without search

You can use `simple` authentication if the user records are all under one `dn` that you know. If the users are under more than one `dn`, use the `anonymous` or `regular` type, which can search the entire LDAP database for the required user name.

If your LDAP server requires authentication to perform searches, use the `regular` type and provide values for `username` and `password`.

## config user local

Use this command to add local user names and configure user authentication for the system. To add authentication by LDAP or RADIUS server you must first add servers using the `config user ldap` and `config user radius` commands.

### Syntax

```
config user local
  edit <user_name>
    set ldap-server <server_name>
    set passwd <password_str>
    set radius-server <server_name>
    set tacacs+-server <server_name>
    set status {enable | disable}
    set type <auth-type>
  end
```

Variable	Description	Default
<user_name>	Enter the user name. Enter a new name to create a new user account or enter an existing user name to edit that account.	No default
ldap-server <server_name>	Enter the name of the LDAP server with which the user must authenticate. You can only select an LDAP server that has been added to the list of LDAP servers. This option is available when <code>type</code> is set to <code>ldap</code> .	No default
passwd <password_str>	Enter the password with which the user must authenticate. Passwords at least 6 characters long provide better security than shorter passwords. This option is available when <code>type</code> is set to <code>password</code> .	No default
radius-server <server_name>	Enter the name of the RADIUS server with which the user must authenticate. You can only select a RADIUS server that has been added to the list of RADIUS servers. This option is available when <code>type</code> is set to <code>radius</code> .	No default
tacacs+-server <server_name>	Enter the name of the TACACS+ server with which the user must authenticate. This option is available when <code>type</code> is set to <code>tacacs+</code> .	No default
status {enable   disable}	Enter <code>enable</code> to allow the local user to authenticate with the FortiSwitch unit.	enable
type <auth-type>	Enter one of the following to specify how this user's password is verified: <ul style="list-style-type: none"> <li><code>ldap</code>: The LDAP server specified in <code>ldap-server</code> verifies the password.</li> <li><code>password</code>: The system verifies the password against the value of the password.</li> <li><code>radius</code>: The RADIUS server specified in <code>radius-server</code> verifies the password.</li> <li><code>tacacs+</code>: The TACACS+ server specified in <code>tacacs+-server</code> verifies the password.</li> </ul>	No default

## config user peer

Use this command to configure a peer user.

### Syntax

```
config user peer
edit <peer_name>
    set ca {Entrust_802.1x_CA | Entrust_802.1x_G2_CA | Entrust_802.1x_L1K_CA | Fortinet_CA
        | Fortinet_CA2}
    set cn <string>
    set cn-type {FQDN | email | ipv4 | ipv6 | string}
    set ldap-mode {password | principal-name}
    set ldap-password <password>
    set ldap-server <string>
```

```

    set ldap-username <string>
    set mandatory-ca-verify {enable | disable}
    set passwd <password>
    set subject <string>
    set two-factor {enable | disable}
  next
end

```

Variable	Description	Default
<peer_name>	Enter the name of the peer user.	No default
ca {Entrust_802.1x_CA   Entrust_802.1x_G2_CA   Entrust_802.1x_L1K_CA   Fortinet_CA   Fortinet_CA2}	Select a certificate authority (CA) for the peer certificate.	No default
cn <string>	Enter the common name for the peer certificate.	No default
cn-type {FQDN   email   ipv4   ipv6   string}	Enter the type of common name for the peer certificate: fully qualified domain name, email address, IPv4 address, IPv6 address, or a text description.	string
ldap-mode {password   principal-name}	Select whether the peer LDAP requires a password or an email address. The password is specified with the <code>set ldap-password</code> command.	password
ldap-password <password>	Enter the password for the peer LDAP. This option is available only when the <code>ldap-mode</code> is set to <code>password</code> .	No default
ldap-server <string>	Enter the name of the LDAP server used for checking access permission.	No default
ldap-username <string>	Enter the user name for the LDAP server.	No default
mandatory-ca-verify {enable   disable}	Enable or disable whether there is mandatory CA verification.	disable
passwd <password>	Enter the user password for two-factor authentication. This option is available only when <code>two-factor</code> is enabled.	No default
subject <string>	Enter any limitations on the peer certificate name.	No default
two-factor {enable   disable}	Enable or disable two-factor authentication. When this option is enabled, the certificate and password are required. Specify the password in the <code>set passwd</code> command.	disable

## config user peergrp

Use this command to configure a peer user group.

### Syntax

```

config user peergrp
  edit <peer_group_name>

```

```

    set member <list_of_peer_names>
  next
end

```

Variable	Description	Default
<peer_group_name>	Enter a name for the new peer group.	No default
<list_of_peer_names>	Enter one of more peer users. Separate the names with a space. The peer users must already be configured with the <code>config user peer</code> command before they are added to a peer user group.	No default

## config user radius

Use this command to add or edit the information used for RADIUS authentication.

The default port for RADIUS traffic is 1812. If your RADIUS server is using a different port you can change the default RADIUS port. You may set a different port for each of your RADIUS servers. The maximum number of remote RADIUS servers that can be configured for authentication is 10.

The RADIUS server is provided with more information to make authentication decisions, based on values in `server`, `nas-ip`, and the `config user group` subcommand `config match`. Attributes include:

- **NAS-IP-Address** — RADIUS setting or IPv4 address of FortiSwitch interface used to talk to RADIUS server, if not configured
- **NAS-IPv6-Address** — RADIUS setting or IPv6 address of FortiSwitch interface used to talk to RADIUS server, if not configured
- **NAS-Port** — physical interface number of the traffic that triggered the authentication
- **Called-Station-ID** — same value as NAS-IP Address but in text format
- **Fortinet-Vdom-Name** — name of VDOM of the traffic that triggered the authentication
- **NAS-Identifier** — configured hostname in non-HA mode; HA cluster group name in HA mode
- **Acct-Session-ID** — unique ID identifying the authentication session
- **Connect-Info** — identifies the service for which the authentication is being performed (web-auth, vpn-ipsec, vpn-pptp, vpn-l2tp, vpn-ssl, admin-login, test)

You can select an alternative authentication method for each server. These include CHAP, PAP, MS-CHAP, and MS-CHAP-v2.

## Syntax

```

config user radius
  edit <RADIUS_user_name>
    set acct-fast-framedip-detect <integer>
    set acct-interim-interval <integer>
    set addr-mode {ipv4 | ipv6}
    set all-usergroup {enable | disable}
    set auth-type {auto | chap | ms_chap | ms_chap_v2 | pap}
    set frame-mtu-size <integer>
    set link-monitor {enable | disable}
    set link-monitor-interval <5-120>
    set nas-ip <use_ip>
    set nas-ip6 <ipv6_addr>
    set radius-coa {enable | disable}
  
```



```

set radius-port <radius_port_num>
set secret <server_password>
set server <domain_ipv4_ipv6>
set service-type {administrative | authenticate-only | call-check | callback-
    administrative | callback-framed | callback-login | callback-nas-prompt | framed
    | login | nas-prompt | outbound}
set source-ip <ipv4_addr>
set source-ip6 <ipv6_addr>
config acct-server
    edit <accounting_server_ID>
        set status {enable | disable}
        set server <accounting_server>
        set secret <accounting_server_secret>
        set port <accounting_server_port>
    next
end
end

```

Variable	Description	Default
<server_name>	Enter a name of the RADIUS user group. Enter a new name to create a new group definition or enter an existing group name to edit that group definition.	No default
acct-fast-framedip-detect <integer>	Enter the number of seconds allowed for the first-time detection of the Framed-IP-Address attribute from DHCP snooping. The range is 2-600 seconds.	2
acct-interim-interval <integer>	Enter the number of seconds between each interim accounting message sent to the RADIUS server. The value range is 60-86400.	600
addr-mode {ipv4   ipv6}	Select whether to connect to the RADIUS server with IPv4 or IPv6. <b>NOTE:</b> If you select <code>ipv4</code> , you must use an IPv4 address for the <code>set server</code> command. If you select <code>ipv6</code> , you must use an IPv6 address for the <code>set server</code> command.	ipv4
all-usergroup {enable   disable}	Enable to automatically include this RADIUS server in all user groups.	disable
auth-type {auto   chap   ms_chap   ms_chap_v2   pap}	Select the authentication method for this RADIUS server. <code>auto</code> uses <code>pap</code> , <code>ms_chap_v2</code> , and <code>chap</code> .	auto
frame-mtu-size <integer>	Enter the maximum frame size in octets used to advertise to the authentication server. The range is 600-1500.	1500
link-monitor {enable   disable}	Enable or disable whether this server sends periodic ping messages to the RADIUS server to test if it is available.	disable
link-monitor-interval <5-120>	Enter how often (in seconds) the server checks if the RADIUS server is available.	15
nas-ip <use_ip>	IPv4 address used as NAS-IP-Address and Called-Station-ID attribute in RADIUS access requests. RADIUS setting or IPv4 address of FortiGate interface used to talk with RADIUS server, if not configured.	No default

Variable	Description	Default
	This option is available when the <code>addr-mode</code> is set to <code>ipv4</code> .	
<code>nas-ip6 &lt;ipv6_addr&gt;</code>	IPv6 address used as NAS-IPv6-Address and Called-Station-ID attribute in RADIUS access requests. RADIUS setting or IPv6 address of FortiGate interface used to talk with RADIUS server, if not configured. This option is available when the <code>addr-mode</code> is set to <code>ipv6</code> .	No default
<code>radius-coa {enable   disable}</code>	Enable or disable whether this server will use RADIUS change of authorization (CoA).	disable
<code>radius-port &lt;radius_port_num&gt;</code>	Change the default RADIUS port for this server. Range is 0-65535	1812
<code>secret &lt;server_password&gt;</code>	Enter the RADIUS server shared secret. The server secret key should be a maximum of 16 characters in length.	No default
<code>server &lt;domain_ipv4_ipv6&gt;</code>	Enter the RADIUS server domain name, IPv4 address, or IPv6 address. <b>NOTE:</b> If you selected <code>ipv4</code> for <code>addr-mode</code> , you must use an IPv4 address for the <code>set server</code> command. If you selected <code>ipv6</code> for <code>addr-mode</code> , you must use an IPv6 address for the <code>set server</code> command.	No default
<code>source-ip &lt;ipv4_addr&gt;</code>	Enter the source IPv4 address for communicating to the RADIUS server. This option is available when the <code>addr-mode</code> is set to <code>ipv4</code> .	0.0.0.0
<code>source-ip6 &lt;ipv6_addr&gt;</code>	Enter the source IPv6 address for communicating to the RADIUS server. This option is available when the <code>addr-mode</code> is set to <code>ipv6</code> .	No default
<b>config acct-server</b>		
<code>&lt;accounting_server_ID&gt;</code>	Enter the identifier for the accounting server. The value range is 0-4294967295.	No default
<code>status {enable   disable}</code>	Enable or disable RADIUS accounting.	disable
<code>secret &lt;accounting_server_secret&gt;</code>	Enter the shared secret key for the RADIUS accounting server.	*
<code>server &lt;accounting_server&gt;</code>	Enter the RADIUS server domain name, IPv4 address, or IPv6 address of the RADIUS server that will be receiving the accounting messages.	No default
<code>service-type {administrative   authenticate-only   call-check   callback-administrative   callback-framed   callback-login   callback-nas-prompt   framed   login   nas-prompt   outbound}</code>	Select the Service-Type value. Separate multiple values with a space.	none
<code>port &lt;accounting_server_port&gt;</code>	Enter the port number for the RADIUS accounting server to receive accounting messages from the FortiSwitch unit.	1813

## Notes on context timeout

The number of seconds that a user context entry can remain in the user context list without the system receiving a communication session from the carrier end point. If a user context entry is not being looked up, then the user must no longer be connected to the network.

This timeout is only required if the system doesn't receive the RADIUS Stop record. However, even if the accounting system does send RADIUS Stop records this timeout should be set in case the FortiSwitch misses a Stop record.

The default user context entry timeout is 28800 seconds (8 hours). You can keep this timeout relatively high because its not usually a problem to have a long list, but entries that are no longer used should be removed regularly.

You might want to reduce this timeout if the accounting server does not send RADIUS Stop records. Also if customer IP addresses change often you might want to set this timeout lower so that out of date entries are removed from the list.

If this timeout is too low the FortiSwitch could remove user context entries for users who are still connected.

## Dynamic Flag values

- `none` — Disable writing event log messages for dynamic profile events.
- `accounting-event` — Enable to write an event log message when the system does not find the expected information in a RADIUS Record. For example, if a RADIUS record contains more than the expected number of addresses.
- `accounting-stop-missed` — Enable to write an event log message whenever a user context entry timeout expires indicating that the system removed an entry from the user context list without receiving a RADIUS Stop message.
- `context-missing` — Enable to write an event log message whenever a user context creation timeout expires indicating that the system was not able to match a communication session because a matching entry was not found in the user context list.
- `profile-missing` — Enable to write an event log message whenever the system cannot find a profile group name in a RADIUS start message that matches the name of a profile group added to the system.
- `protocol-error` — Enable to write an event log message if RADIUS protocol errors occur. For example, if a RADIUS record contains a RADIUS secret that does not match the one added to the dynamic profile.
- `radiusd-other` — Enable to write event log messages for other events. The event is described in the log message. For example, write a log message if the memory limit for the user context list is reached and the oldest entries in the table have been dropped.

## Example

This example shows how to connect to a RADIUS server using IPv4:

```
config user radius
  edit "local-RADIUS"
    set addr-mode ipv4
    set server 10.0.23.5
    set secret djfhde;rkjfkrekdfjeke
    set auth-type ms_chap_v2
    set acct-interim-interval 1200
  config acct-server
    edit 1
      set status enable
      set server 10.0.23.5
      set secret djfhde;rkjfkrekdfjeke
      set port 1813
    next
```

```
    end
  next
end
```

This example shows how to connect to a RADIUS server using IPv6:

```
config user radius
  edit "radius"
    set acct-interim-interval 60
    config acct-server
      edit 1
        set status enable
        set server "ipv6local"
        set secret djfhde;rkjfkrekdfjeke
      next
    end
    set radius-coa enable
    set secret djfhde;rkjfkrekdfjeke
    set server "ipv6local"
    set service-type login callback-nas-prompt
    set addr-mode ipv6
    set nas-ip6 4001:1:2::1
    set source-ip6 4001:1:2::1
  next
end
```

## config user setting

Use this command to change user authorization settings.

### Syntax

```
config user setting
  set auth-blackout-time <blackout_time_int>
  set auth-cert <cert_name>
  set auth-http-basic {disable | enable}
  set auth-invalid-max <int>
  set auth-multi-group {enable | disable}
  set auth-secure-http {enable | disable}
  set auth-type {ftp | http | https | telnet}
  set auth-timeout <auth_timeout_minutes>
  set auth-timeout-type {idle-timeout | hard-timeout | new-session}
  config auth-ports
    edit <auth-table-entry-id>
      set port <port_int>
      set type {ftp | http | https | telnet}
    end
  end
```

Variable	Description	Default
auth-blackout-time <blackout_time_int>	When a firewall authentication attempt fails 5 times within one minute the IP address that is the source of the authentication attempts is denied access for the <blackout_time_int> period in seconds. The range is 0 to 3600 seconds.	0
auth-cert <cert_name>	HTTPS server certificate for policy authentication. Fortinet_Factory, Fortinet_Firmware (if applicable to your FortiSwitch), and self-sign are built-in certificates but others will be listed as you add them.	self-sign
auth-http-basic {disable   enable}	Enable or disable support for HTTP basic authentication for identity-based firewall policies. HTTP basic authentication usually causes a browser to display a pop-up authentication window instead of displaying an authentication web page. Some basic web browsers, for example, web browsers on mobile devices, may only support HTTP basic authentication.	disable
auth-invalid-max <int>	Enter the maximum number of failed authentication attempts to allow before the client is blocked. Range: 1-100.	5
auth-multi-group {enable   disable}	This option can be disabled if the Active Directory structure is setup such that users belong to only 1 group for purpose of firewall authentication.	enable
auth-secure-http {enable   disable}	Enable to have http user authentication redirected to secure channel - https.	disable
auth-type {ftp   http   https   telnet}	Set the user authentication protocol support for firewall policy authentication. User controls which protocols should support the authentication challenge.	No Default
auth-timeout <auth_timeout_minutes>	Set the number of minutes before the firewall user authentication timeout requires the user to authenticate again. The maximum authtimeout interval is 480 minutes (8 hours). To improve security, keep the authentication timeout at the default value of 5 minutes.	5
auth-timeout-type {idle-timeout   hard-timeout   new-session}	Set the type of authentication timeout. <code>idle-timeout</code> — applies only to idle session <code>hard-timeout</code> — applies to all sessions <code>new-session</code> — applies only to new sessions	idle-timeout
<b>config auth-ports</b>		
<auth-table-entry-id>	Create an entry in the authentication port table if you are using non-standard ports.	No Default
port <port_int>	Specify the authentication port. Range 1 to 65535.	1024
type {ftp   http   https   telnet}	Specify the protocol to which <code>port</code> applies.	http

## config user tacacs+

Use this command to add or edit the information used for TACACS+ authentication.

## Syntax

```
config user tacacs+
  edit <user name>
    set authen-type {ascii | auto | chap | mschap | pap}
    set authorization {enable | disable}
    set key <passwd>
    set port <port number>
    set server <domain>
    set source-ip <ipv4_addr>
  end
```

Variable	Description	Default
<user name>	Enter the name of the user.	No default
authen-type{ascii   auto   chap   mschap   pap}	Set the authentication type. Auto will use PAP, MSCHAP, and CHAP (in that order).	auto
authorization {disable   enable}	Enable TACACS+ authorization (service=fortigate)	disable
key <passwd>	Password value for the server.	*
port <port_int>	Specify the authentication port. Range 1 to 65535.	49
server <domain>	Specify the domain name of the server	No default
source-ip <ipv4_addr>	Set the source IP address.	0.0.0.0

## Example

This example shows how to configure a TACACS user account for login authentication:

```
config user tacacs+
  edit tacserver
    set authen-type ascii
    set authorization enable
    set key temporary
    set server tacacs_server
  end
```

# diagnose

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## diagnose bpdu-guard display status

Use this command to display the status of the spanning tree protocol (STP) bridge protocol data unit (BPDU) guard:

```
diagnose bpdu-guard display status
```

To configure STP BPDU guard, see [config switch interface on page 104](#).

### Example output

Portname	State	Status	Timeout (m)	Count	Last-Event
port1	disabled	-	-	-	-
port2	disabled	-	-	-	-
port3	disabled	-	-	-	-
port4	disabled	-	-	-	-
port5	disabled	-	-	-	-
port6	disabled	-	-	-	-
port9	disabled	-	-	-	-
port10	disabled	-	-	-	-
port11	disabled	-	-	-	-
port12	disabled	-	-	-	-
port13	disabled	-	-	-	-
port14	disabled	-	-	-	-
port15	disabled	-	-	-	-
port16	disabled	-	-	-	-
port17	disabled	-	-	-	-
port18	disabled	-	-	-	-
port19	disabled	-	-	-	-
port20	disabled	-	-	-	-
port21	disabled	-	-	-	-
port22	disabled	-	-	-	-
port23	disabled	-	-	-	-
port24	disabled	-	-	-	-
port25	disabled	-	-	-	-
port26	disabled	-	-	-	-
port27	disabled	-	-	-	-
port28	disabled	-	-	-	-

port29	disabled	-	-	-	-
port30	enabled	-	60	0	-

## diagnose certificate all

Use this command to verify all system certificates:

```
diagnose certificate all
```

### Example output

```
S148EN5919002268 # diagnose certificate all
```

```
Certificate Authority
```

```
-----
Name           : Fortinet_802.1x_CA
Fingerprint(MD5) : AA:EE:5C:F8:B0:D8:59:6D:2E:0C:BE:67:42:1C:F7:DB
Serial Number   : 04:e1:e7:a4:dc:5c:f2:f3:6d:c0:2b:42:b8:5d:15:9f
Integrity       : Passed
Timeliness      : Valid (Expires on 2028-10-22 12:00:00 GMT)
```

```
Name           : Fortinet_CA
Fingerprint(MD5) : 86:40:5C:F4:C2:A6:0B:96:82:9E:5F:E7:4F:D9:51:22
Serial Number   : 00
Integrity       : Passed
Timeliness      : Valid (Expires on 2056-05-27 20:27:39 GMT)
```

```
Name           : Fortinet_CA2
Fingerprint(MD5) : 85:A9:7C:FC:85:D6:2D:8B:9F:18:0A:8B:50:29:04:A9
Serial Number   : da:f6:36:b4:43:d4:a5:8b
Integrity       : Passed
Timeliness      : Valid (Expires on 2038-01-19 22:34:39 GMT)
```

```
Name           : Fortinet_Sub_CA2
Fingerprint(MD5) : 2E:36:70:82:7F:1E:21:CE:94:20:82:01:62:5E:30:DD
Serial Number   : 20:01
Integrity       : Passed
Timeliness      : Valid (Expires on 2056-05-27 20:48:33 GMT)
```

```
Name           : Fortinet_fsw_cloud_CA
Fingerprint(MD5) : AA:EE:5C:F8:B0:D8:59:6D:2E:0C:BE:67:42:1C:F7:DB
Serial Number   : 04:e1:e7:a4:dc:5c:f2:f3:6d:c0:2b:42:b8:5d:15:9f
Integrity       : Passed
Timeliness      : Valid (Expires on 2028-10-22 12:00:00 GMT)
```

```
Local
```

```
-----
Name           : Fortinet_802.1x
Fingerprint(MD5) : 0C:7B:E2:32:85:D0:05:DA:CA:16:15:86:82:D7:28:63
Serial Number   : 0d:b1:1b:bc:13:51:13:23:18:64:23:55:cd:db:3b:fe
```

## diagnose

---

```
Integrity      : Passed
Key-pair       : Passed
Timeliness     : Valid (Expires on 2022-05-24 12:00:00 GMT)

Name           : Fortinet_Factory
Fingerprint (MD5) : A0:20:10:10:17:D5:13:E5:9D:93:72:F4:FB:37:10:57
Serial Number   : 0e:98:f9
Integrity      : Passed
Key-pair       : Passed
Timeliness     : Valid (Expires on 2056-01-19 03:14:07 GMT)

Name           : Fortinet_Factory2
Fingerprint (MD5) : 3B:73:EC:E9:6E:F1:39:12:32:16:A5:16:79:E4:04:0C
Serial Number   : 4b:6e:10
Integrity      : Passed
Key-pair       : Passed
Timeliness     : Valid (Expires on 2038-01-19 03:14:07 GMT)

Name           : Fortinet_Firmware
Fingerprint (MD5) : A3:09:DB:D7:31:CA:7C:A6:CD:03:B1:91:FB:D7:13:23
Serial Number   : 41:1d:d5
Integrity      : Passed
Key-pair       : Passed
Timeliness     : Valid (Expires on 2038-01-19 03:14:07 GMT)

Remote
-----
```

## diagnose certificate ca

Use this command to verify CA certificates:

```
diagnose certificate ca
```

### Example output

```
S148EN5919002268 # diagnose certificate ca

Name           : Fortinet_802.1x_CA
Fingerprint (MD5) : AA:EE:5C:F8:B0:D8:59:6D:2E:0C:BE:67:42:1C:F7:DB
Serial Number   : 04:e1:e7:a4:dc:5c:f2:f3:6d:c0:2b:42:b8:5d:15:9f
Integrity      : Passed
Timeliness     : Valid (Expires on 2028-10-22 12:00:00 GMT)

Name           : Fortinet_CA
Fingerprint (MD5) : 86:40:5C:F4:C2:A6:0B:96:82:9E:5F:E7:4F:D9:51:22
Serial Number   : 00
Integrity      : Passed
Timeliness     : Valid (Expires on 2056-05-27 20:27:39 GMT)

Name           : Fortinet_CA2
Fingerprint (MD5) : 85:A9:7C:FC:85:D6:2D:8B:9F:18:0A:8B:50:29:04:A9
```

```
Serial Number      : da:f6:36:b4:43:d4:a5:8b
Integrality        : Passed
Timeliness         : Valid (Expires on 2038-01-19 22:34:39 GMT)

Name               : Fortinet_Sub_CA2
Fingerprint (MD5)  : 2E:36:70:82:7F:1E:21:CE:94:20:82:01:62:5E:30:DD
Serial Number      : 20:01
Integrality        : Passed
Timeliness         : Valid (Expires on 2056-05-27 20:48:33 GMT)

Name               : Fortinet_fsw_cloud_CA
Fingerprint (MD5)  : AA:EE:5C:F8:B0:D8:59:6D:2E:0C:BE:67:42:1C:F7:DB
Serial Number      : 04:e1:e7:a4:dc:5c:f2:f3:6d:c0:2b:42:b8:5d:15:9f
Integrality        : Passed
Timeliness         : Valid (Expires on 2028-10-22 12:00:00 GMT)
```

## diagnose certificate local

Use this command to verify local certificates:

```
diagnose certificate local
```

### Example output

```
S548DF5018000776 # diagnose certificate local

Name               : Fortinet_802.1x
Fingerprint (MD5)  : 0C:7B:E2:32:85:D0:05:DA:CA:16:15:86:82:D7:28:63
Serial Number      : 0d:b1:1b:bc:13:51:13:23:18:64:23:55:cd:db:3b:fe
Integrality        : Passed
Key-pair           : Passed
Timeliness         : Valid (Expires on 2022-05-24 12:00:00 GMT)

Name               : Fortinet_Factory
Fingerprint (MD5)  : B1:92:9D:7B:63:4B:9D:F7:57:FF:E6:59:AE:C2:21:2A
Serial Number      : 19:c1:ea
Integrality        : Passed
Key-pair           : Passed
Timeliness         : Valid (Expires on 2038-01-19 03:14:07 GMT)

Name               : Fortinet_Factory2
Fingerprint (MD5)  : F8:E4:51:61:B6:F0:98:FA:43:1F:4C:FD:C1:5D:B2:62
Serial Number      : 19:c1:ec
Integrality        : Passed
Key-pair           : Passed
Timeliness         : Valid (Expires on 2038-01-19 03:14:07 GMT)

Name               : Fortinet_Firmware
Fingerprint (MD5)  : A3:09:DB:D7:31:CA:7C:A6:CD:03:B1:91:FB:D7:13:23
Serial Number      : 41:1d:d5
Integrality        : Passed
```

```
Key-pair          : Passed
Timeliness        : Valid (Expires on 2038-01-19 03:14:07 GMT)
```

## diagnose certificate remote

Use this command to verify remote certificates:

```
diagnose certificate remote
```

## diagnose debug application

Use this command to set the debug level for application daemons. Some applications must be set to level 8 or higher to enable output for other diagnose debug commands. If you do not specify the debugging level, the current debugging level is returned.

```
diagnose debug application <application> [<debugging_level>]
```

The following applications are supported:

- alertd—Monitor and alert daemon
- authd—Authentication control daemon
- bfd— Bidirectional forwarding detection (BFD) daemon
- bgpd—Border Gateway Protocol (BGP) daemon
- ctrld— General FortiSwitch control daemon
- cu\_swtpd—Switch-controller CAPWAP control daemon
- dhcp6c—DHCPv6 client module
- dhcpc—DHCP client module
- dhcrelay—DHCP relay daemon
- dmid—Diagnostic monitoring interface (DMI) daemon
- dnsproxy—DNS proxy module
- eap\_proxy—EAP proxy daemon
- erspan-auto-mgr—ERSPAN-auto mode configuration resolution daemon
- flcmd—FortiLink command daemon
- flow-export—Flow-export
- fnbamd—FortiGate nonblocking authentication daemon
- fortilinkd—FortiLink daemon
- fpm—Hardware routing daemon
- flan-mgr—FortiLAN Cloud daemon
- gratarp—IP conflict gratuitous ARP utility
- gui—GUI service
- httpsd—HTTP and HTTPS daemon
- ip6addr—IPv6 address utility
- ipconflictd— IP conflict detection daemon
- isisd—Intermediate System to Intermediate System Protocol (IS-IS) daemon

- l2d—Daemon for layer-2 features
- l2dbg—Daemon for hardware-related operations needed by layer 2
- l3—Layer-3 debugging
- lacpd—Link Aggregation Control Protocol (LACP) daemon
- libswitchd—FortiSwitch library daemon
- link-monitor—Link monitor daemon
- lldpmedd—Link Layer Discovery Protocol-Media Endpoint Discovery (LLPD-MED) daemon
- mcast-snooping—Multicast-snooping debugging
- miglogd—Logging daemon
- mrpd—Media Redundancy Protocol (MRP) daemon
- ntpd—Network Time Protocol (NTP) daemon
- nwmcfgd—Daemon for network-monitoring configuration
- nwmonitord—Packet-handling and parsing daemon for network monitoring
- ospf6d—Open shortest path first (OSPF IPv6) routing daemon
- ospfd—Open shortest path first (OSPF IPv4) routing daemon
- pbrd—Policy-based routing (PBR) daemon
- pimd—Protocol Independent Multicast (PIM) daemon
- portspeedd—Port speed daemon
- radius\_das—RADIUS CoA daemon
- radiusd—RADIUS daemon
- radvd—Router advertisement daemon
- ripd—Routing Information Protocol (RIP) routing daemon
- ripngd—Routing Information Protocol NG (RIPNG) daemon
- router-launcher—Daemon for launching the routing system
- rsyslogd—Remote SYSLOG daemon
- sflowd—sFlow daemon
- snmpd—Simple Network Management Protocol (SNMP) daemon
- sshd—Secure Sockets Shell (SSH) daemon
- staticd—Static route daemon
- statsd—Statistics collection daemon
- stpd—Spanning Tree Protocol (STP) daemon
- switch-launcher—Daemon for launching the FortiSwitch system
- trunkd—Trunk daemon
- vrrpd—Virtual Router Redundancy Protocol (VRRP) daemon
- wiredap —Daemon for 802.1x port-based authentication
- wpa\_supp—MACsec Key Agreement (MKA) MACsec daemon
- zebra—Core router daemon

## Example output

```
S524DF4K15000024 # diagnose debug application flgd  
  
flgd debug level is 8 (0x8)
```

## diagnose debug authd

Use these commands to manage the authentication daemon:

```
diagnose debug authd clear
diagnose debug authd fsso clear-logons
diagnose debug authd fsso filter clear
diagnose debug authd fsso filter group <group_name>
diagnose debug authd fsso filter server <FSSO_agent_name>
diagnose debug authd fsso filter source <IPv4_address> <IPv4_address>
diagnose debug authd fsso filter user <user_name>
diagnose debug authd fsso list
diagnose debug authd fsso refresh-groups
diagnose debug authd fsso refresh-logons
diagnose debug authd fsso server-status
diagnose debug authd fsso summary
```

Variable	Description
clear	Delete internal data structures and keepalive sessions.
fsso clear-logons	Delete Fortinet Single Sign on (FSSO) logon information.
fsso filter clear	Delete all FSSO filters.
fsso filter group <group_name>	List only the logons by the specified FSSO group.
fsso filter server <FSSO_agent_name>	List only the logons for the specified FSSO agent.
fsso filter source <IPv4_address> <IPv4_address>	List only the logons for the specified range of IPv4 addresses.
fsso filter user <user_name>	List only the logons by the specified user.
fsso list	Display the current FSSO logons.
fsso refresh-groups	Refresh the FSSO group mappings.
fsso refresh-logons	Synchronize the FSSO logon database.
fsso server-status	Display the status of the FSSO agent connection.
fsso summary	Display a summary of current FSSO logons.

### Example output

```
diag debug authd fsso server-status
```

```
Server Name      Connection Status  Version
-----
fsso             connected          FSSO 5.0.0237
```



```
diagnose debug authd fsso list
IP: 10.1.1.5  User: ADM_FWCHECK  Groups: FW_OPERATORS/ADMINISTRATORS
```

## diagnose debug bfd

Use this command to enable, show, or disable the debugging level for bidirectional forwarding detection (BFD):

```
diagnose debug bfd {all | appl | fsm | net | show | zebra } {enable | disable}
```

## diagnose debug bgp

Use this command to enable, show, or disable the debugging level for Border Gateway Protocol (BGP) routing:

```
diagnose debug bgp {all | appl | as4 | flowspec | keepalives | neighbor-events | nht |
normal | show | updates | zebra} {enable | disable}
```

## diagnose debug cli

Use this command to set or find the debug level for the CLI:

```
diagnose debug cli [<0-8>]
```

### Example output

```
S524DF4K15000024 # diagnose debug cli
```

```
Cli debug level is 8
```

## diagnose debug config-error-log

Use this command to display information about the configuration error log:

```
diagnose debug config-error-log {clear | read}
```

Variable	Description
clear	Clear the configuration error log.
fsso	Display configuration errors on the console.

## diagnose debug console

Use these commands to display information about the console:

```
diagnose debug console no-user-log-msg {enable | disable}
diagnose debug console send <AT command>
diagnose debug console timestamp {enable | disable}
```

Variable	Description
no-user-log-msg {enable   disable}	Enable or disable the display of user log messages on the console.
send <AT command>	Send out the specified modem AT command.
timestamp {enable   disable}	Enable or disable the time stamp.

## diagnose debug crashlog

Use this command to display or erase the crash log:

```
diagnose debug crashlog {clear | get | kill-with-crashlog <process_ID> | read}
```

Variable	Description
clear	Clear the crash log.
get	Display the crash log on the console.
kill-with-crashlog <process_ID>	End the daemon using the specified process ID.
read	Display the crash log on the console in a readable format.

### Example output

```
S524DF4K15000024 # diagnose debug crashlog get
```

```
Rk9SVP94nDK0NLPUNTTSNTZUMDSzMjCwMjVXSErOjc9IzEvJSY3PTM8tKI5Pzk2x
UvB1dgw00Q1xdPJx1Q32jHK1MjQwMuECCCAjA0NzXQNLXQMzBUOgZgMrQ0uFkoxU
hezMnJzUFIWUxNTc/DyFzGIF/aTMPP301JKSSiuF4pLEktJiW4MKAY6AAELWb2gF
dIKJKUn6AQIIVb+JmZWpCUn6AQIIVb+RlYGxlbExSfoBAghZv7GVqamVEWn+Bwgg
ZP0mVgYWwCAkST9AAKHqNzQHxR8p+gECCFW/MdALhiToN+ICCCA0/WZWxqTpBwgg
ZP3AwDMGJkGS3A8QQKj6TYBJwIik/QABhKbfBBiFJLkfiIDQ9JtaGZNivxEXQAAh
6zcDxb8RafEHEEC0+oH+NyAt/QMEEKp+UP41Ikk/QADB9ZuD8r+RpRXQIOLlGxsY
cAEEEEKoJphakpgCAAEELWbwgKQPSQhAggFD1A3OAMWkhABBAaPotrUxIsx8ggJD1
A0sgU1JzMEAAIeshZl8jICJJP0AAIeshHpgBz0koAAy6AAELWb24FTgQk6QcIIFT9
JkD3k5KCDLgAAghNPzD+SbMfIIBQ9ZsaAyshkvQDBBCyfqDlwEKYtBIIIBQ9QOj
0IS08AcIIDT9ZqSlHyMugABC1W8EDH/SakCAAELVD8w/JMY/QAAh6wcWH0bAJECS
foAAguu3UDAwztzIClmcKlB+gEggggJBNSLQCV8MkuQAggND0A+sA0lIQQACH6jcC
lmGklYAAAYSkH1gCGZkCnUCSfoAAQtUPKGFJsx8ggFD1mwBzEGklGEAAoek3AUyi
...
```

```
S548DF5018000776 # diagnose debug crashlog read
```

```
1: 2020-03-13 11:54:15 the killed daemon is /bin/fsmgrd: status=0x0
2: 2020-03-13 16:55:27 the killed daemon is /bin/fsmgrd: status=0x0
3: 2020-03-13 16:59:09 the killed daemon is /bin/fsmgrd: status=0x0
4: 2020-03-13 17:32:56 the killed daemon is /bin/fsmgrd: status=0x0
5: 2020-03-13 18:10:52 the killed daemon is /bin/fsmgrd: status=0x0
6: 2020-03-13 18:45:45 the killed daemon is /bin/fsmgrd: status=0x0
7: 2020-03-13 18:52:24 the killed daemon is /bin/fsmgrd: status=0x0
8: 2020-03-16 11:59:48 restart_reason=SYSTEM SHUTDOWN
9: 2020-03-17 10:16:42 restart_reason=SYSTEM SHUTDOWN
10: 2020-03-23 09:23:22 restart_reason=SYSTEM SHUTDOWN
11: 2020-03-24 08:33:04 restart_reason=SYSTEM SHUTDOWN
12: 2020-03-26 08:11:33 restart_reason=SYSTEM SHUTDOWN
13: 2020-04-10 08:48:25 restart_reason=SYSTEM SHUTDOWN
14: 2020-05-06 10:51:28 the killed daemon is /bin/fsmgrd: status=0x0
15: 2020-05-06 11:47:45 the killed daemon is /bin/fsmgrd: status=0x0
16: 2020-05-06 17:49:04 the killed daemon is /bin/fsmgrd: status=0x0
17: 2020-05-28 08:45:54 restart_reason=SYSTEM SHUTDOWN
18: 2020-05-28 09:09:00 the killed daemon is /bin/fsmgrd: status=0x0
19: 2020-05-28 09:36:23 the killed daemon is /bin/fsmgrd: status=0x0
20: 2020-05-28 18:12:20 the killed daemon is /bin/fsmgrd: status=0x0
21: 2020-05-29 13:31:52 the killed daemon is /bin/fsmgrd: status=0x0
22: 2020-05-29 15:04:20 the killed daemon is /bin/fsmgrd: status=0x0
23: 2020-05-29 16:01:28 the killed daemon is /bin/fsmgrd: status=0x0
24: 2020-05-29 16:27:41 the killed daemon is /bin/fsmgrd: status=0x0
25: 2020-06-01 16:04:11 restart_reason=SYSTEM SHUTDOWN
26: 2020-06-02 09:56:49 the killed daemon is /bin/fsmgrd: status=0x0
```

## diagnose debug disable

Use this command to disable debugging output:

```
diagnose debug disable
```

## diagnose debug enable

Use this command to enable debugging output:

```
diagnose debug enable
```

## diagnose debug info

Use this command to display the debugging level:

```
diagnose debug info
```

## Example output

```
S524DF4K15000024 # diagnose debug info
debug output:          enable
console timestamp:     disable
console no user log message:  disable
fsmgr debug level:     16 (0x10)
CLI debug level:       8
```

## diagnose debug isis

Use this command to enable, show, or disable the debugging level for Intermediate System to Intermediate System Protocol (IS-IS) routing:

```
diagnose debug isis {adj-packets | all | appl | bfd | events | flooding | lsp-gen | lsp-
  sched | packet-dump | route-events | show | snp-packets | spf-events | tx-queue |
  update-packets} {enable | disable}
```

## diagnose debug kernel level

Use this command to display or set the debugging level for the kernel:

```
diagnose debug kernel level [<integer>]
```

## Example output

```
S524DF4K15000024 # diagnose debug kernel level

Kernel debug level is 0
```

## diagnose debug ospf

Use this command to enable, show, or disable the debugging level for open shortest path first (OSPF) routing for IPv4 traffic:

```
diagnose debug ospf {all | appl | event | ism-debug | lsa-debug | nsm-debug | nssa | packet-
  debug | show | zebra-debug} {enable | disable}
```

## diagnose debug ospf6

Use this command to enable or disable the debugging level for open shortest path first (OSPF) routing for IPv6 traffic:

```
diagnose debug ospf6 {abr | all | appl | asbr | border-routers | flooding | interface | lsa  
  | lsa-debug | message | neighbor | packet-debug | route | route-debug | spf | zebra}  
{enable | disable}
```

## diagnose debug packet\_test

Use this command to display a report about the specified port for technical support:

```
diagnose debug packet_test <port_ID>
```

### Example output

```
S524DF4K15000024 # diagnose debug packet_test 30  
  
RX: port:0(tx port 30) len:0  
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00  
  
RX: port:0(tx port 30) len:0  
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00  
  
Send: 2, Recv: 2
```

## diagnose debug pbr

Use this command to enable, show, or disable the debugging level for policy-based routing (PBR):

```
diagnose debug pbr {all | appl | events | map | nht | show | zebra} {enable | disable}
```

## diagnose debug pim

Use this command to enable, show, or disable the debugging level for Protocol Independent Multicast (PIM) routing:

```
diagnose debug pim {all | appl | events | igmp-events | igmp-packets | igmp-trace | mroute |  
  packet-dump | packets | show | static | trace | zebra} {enable | disable}
```

## diagnose debug port-mac

**NOTE:** This command is available only on FortiSwitch units that have the split-port feature available.

Use this command to display the mapping between MAC addresses and ports:

```
diagnose debug port-mac {check-mac | list}
```

Variable	Description
check-mac	Check to see if the specified MAC address is valid.
list	List the mapping between MAC addresses and ports.

## Example output

```
S524DF4K15000024 # diagnose debug port-mac check-mac 08:5b:0e:f1:95:e4
Input MAC address 08:5b:0e:f1:95:e4 found in range
08:5b:0e:e5:4f:d6--08:5b:0e:f1:9b:a4
90:6c:ac:30:19:22--90:6c:ac:7b:d6:d0
Allocated split-port MAC for port 32 is 00:00:00:00:00:00.
```

```
S524DF4K15000024 # diagnose debug port-mac list
Base MAC: 08:5b:0e:f1:95:e4
```

Port Name	Port #	Split Port Idx	MAC
=====	=====	=====	=====
port1	1	0	08:5b:0e:f1:95:e6
port2	2	0	08:5b:0e:f1:95:e7
port3	3	0	08:5b:0e:f1:95:e8
port4	4	0	08:5b:0e:f1:95:e9
port5	5	0	08:5b:0e:f1:95:ea
port6	6	0	08:5b:0e:f1:95:eb
port7	7	0	08:5b:0e:f1:95:ec
port8	8	0	08:5b:0e:f1:95:ed
port9	9	0	08:5b:0e:f1:95:ee
port10	10	0	08:5b:0e:f1:95:ef
port11	11	0	08:5b:0e:f1:95:f0
port12	12	0	08:5b:0e:f1:95:f1
port13	13	0	08:5b:0e:f1:95:f2
port14	14	0	08:5b:0e:f1:95:f3
port15	15	0	08:5b:0e:f1:95:f4
port16	16	0	08:5b:0e:f1:95:f5
port17	17	0	08:5b:0e:f1:95:f6
port18	18	0	08:5b:0e:f1:95:f7
port19	19	0	08:5b:0e:f1:95:f8
port20	20	0	08:5b:0e:f1:95:f9
port21	21	0	08:5b:0e:f1:95:fa
port22	22	0	08:5b:0e:f1:95:fb
port23	23	0	08:5b:0e:f1:95:fc
port24	24	0	08:5b:0e:f1:95:fd
port25	25	0	08:5b:0e:f1:95:fe
port26	26	0	08:5b:0e:f1:95:ff
port27	27	0	08:5b:0e:f1:96:00
port28	28	0	08:5b:0e:f1:96:01
port29	29	0	08:5b:0e:f1:96:02
port30	30	0	08:5b:0e:f1:96:03
internal	31	0	08:5b:0e:f1:95:e4

## diagnose debug report

Use this command to display a detailed debugging report for technical support:

```
diagnose debug report
```

### Example output

```
S524DF4K15000024 # diagnose debug report
```

```
Version: FortiSwitch-524D-FPOE v3.6.3,buid0390,171020 (GA)
Serial-Number: S524DF4K15000024
BIOS version: 04000013
System Part-Number: P18045-04
Burn in MAC: 08:5b:0e:f1:95:e4
Hostname: S524DF4K15000024
Distribution: International
Branch point: 390
System time: Tue Jan  6 13:53:02 1970
```

```
-----
Serial Number: S524DF4K15000024   Diagnose output
-----
```

```
### get system status
```

```
CPU states: 0% user 4% system 0% nice 96% idle
Memory states: 10% used
Average network usage: 0 kbps in 1 minute, 0 kbps in 10 minutes, 0 kbps in 30 minutes
Uptime: 5 days,  21 hours,  53 minutes
```

```
### get system performance status
```

```
config system interface
edit "mgmt"
set ip 192.168.1.99 255.255.255.0
set allowaccess ping https ssh
set type physical
set snmp-index 33
next
edit "internal"
set type physical
set snmp-index 32
next
end
```

```
### show system interface
```

```
### show router static
```

```
### diagnose ip address list
...'
```

## diagnose debug reset

Use this command to reset all debugging levels to the default levels:

```
diagnose debug reset
```

## diagnose debug rip

Use this command to enable, show, or disable the debugging level for IPv4 Routing Information Protocol (RIP) routing:

```
diagnose debug rip {all | appl | events | packet-rx | packet-tx | show | zebra} {enable | disable}
```

## diagnose debug ripng

Use this command to enable, show, or disable the debugging level for IPv6 Routing Information Protocol (RIP) routing:

```
diagnose debug ripng {all | appl | events | packet-rx | packet-tx | show | zebra} {enable | disable}
```

## diagnose debug static

Use this command to enable or disable the debugging level for static routes:

```
diagnose debug static {all | appl} {enable | disable}
```

## diagnose debug unit\_test

Use this command to enable or disable the debugging of unit tests:

```
diagnose debug unit_test {enable | disable}
```

### Example output

```
S524DF4K15000024 # diagnose debug unit_test enable
libsw_unit_test argc 2
cmd =0
```



## diagnose debug zebra

Use this command to enable, show, or disable the debugging level for the core router daemon:

```
diagnose debug zebra {all | appl | events | fpm | kernel | packet-rx | packet-rx-detail |  
    packet-tx | packet-tx-detail | rib | rib-queue | show} {enable | disable}
```

## diagnose firewall ip clear-counter

Use this command to clear the IPv4 iptables counter:

```
diagnose firewall ip clear-counter
```

## diagnose firewall ip show

Use this command to show IPv4 iptables:

```
diagnose firewall ip show
```

## diagnose firewall ipv6 clear-counter

Use this command to clear the IPv6 iptables counter:

```
diagnose firewall ipv6 clear-counter
```

## diagnose firewall ipv6 show

Use this command to show IPv6 iptables:

```
diagnose firewall ipv6 show
```

## diagnose flapguard status

Use this command to get flap-guard information for all switch ports:

```
diagnose flapguard status
```

## Example output

S524DF4K15000024 # diagnose flapguard status

Portname	State	Status	Timeout (m)	flap-rate	flap-duration
flaps/duration	Last-Event				
port1	disabled	-	-	5	30
0	-				
port2	disabled	-	-	5	30
0	-				
port3	disabled	-	-	5	30
0	-				
port4	disabled	-	-	5	30
0	-				
port5	disabled	-	-	5	30
0	-				
port6	disabled	-	-	5	30
0	-				
port7	disabled	-	-	5	30
0	-				
port8	disabled	-	-	5	30
0	-				
port9	enabled	-	0	5	30
0	-				
port10	disabled	-	-	5	30
0	-				
port11	disabled	-	-	5	30
0	-				
port12	disabled	-	-	5	30
0	-				
port13	disabled	-	-	5	30
0	-				
port14	disabled	-	-	5	30
0	-				
port15	disabled	-	-	5	30
0	-				
port16	disabled	-	-	5	30
0	-				
port17	disabled	-	-	5	30
0	-				
port18	disabled	-	-	5	30
0	-				
port19	enabled	-	30	15	10
0	-				
port20	disabled	-	-	5	30
0	-				

port21	disabled	-	-	5	30
0	-				
port22	disabled	-	-	5	30
0	-				
port23	disabled	-	-	5	30
0	-				
port24	disabled	-	-	5	30
0	-				
port25	disabled	-	-	5	30
0	-				
port26	disabled	-	-	5	30
0	-				
port27	disabled	-	-	5	30
0	-				
port28	disabled	-	-	5	30
0	-				
port29	disabled	-	-	5	30
0	-				
port30.1	disabled	-	-	5	30
0	-				
port30.2	disabled	-	-	5	30
0	-				
port30.3	disabled	-	-	5	30
0	-				
port30.4	disabled	-	-	5	30
0	-				

## diagnose hardware

Use these commands to diagnose the hardware. You must be logged in as a super user for these commands.

```
diagnose hardware certificate
diagnose hardware entropy-status
diagnose hardware ioport {byte <value> | long <arguments> | word <arguments>}
diagnose hardware switchinfo {l3-ecmp-table | l3-egress-table | l3-host-table | l3-intf-
    table | l3-ip-mapping-table | l3-pbr-mapping-table | l3-pbr-nhop-group-table | l3-
    routing-table | l3-summary | l3-v6-host-table | l3-v6-routing-table}
diagnose hardware sysinfo {bootenv | cpu | interrupts | iomem | memory | slab}
diagnose hardware usb
```

Variable	Description
certificate	Verify which certificates are present on the FortiSwitch unit and that all installed certificates are valid.
entropy-status	Display information about FIPS mode and entropy.
ioport {byte <value>   long <arguments>   word <arguments>}	Read and write data using the input/output port.

Variable	Description
{l3-ecmp-table   l3-egress-table   l3-host-table   l3-intf-table   l3-ip-mapping-table   l3-pbr-mapping-table   l3-pbr-nhop-group-table   l3-routing-table   l3-summary   l3-v6-host-table   l3-v6-routing-table}	Display information about the FortiSwitch hardware.
sysinfo {bootenv   cpu   interrupts   iomem   memory   slab}	Display information about the system.
usb	Display information about the connected USB devices.

## Example output

```
S424EPTF19000004 # diagnose hardware entropy-status
```

```
Entropy Seeded:      Yes
Entropy Source:      USB [Vendor: Alea, VendorID= 0X12D8 ]
Entropy Mode:        INIT
Last seeded @:       0 D : 0 H : 0 M ago.
```

```
FIPS Status:         2
BIOS OS security level :      1
BIOS FIPS Capabilities :      1
BIOS fips_enabled status:     1
```

```
S548DF5018000776 # diagnose hardware certificate
Checking Fortinet_CA.cer integrity .....Passed
Checking Fortinet_Factory.cer integrity .....Passed
Checking Fortinet_Factory.cer key-pair integrity .....Passed
Checking Fortinet_Factory.cer Serial-No. ....Passed
Checking Fortinet_Factory.cer timeliness .....Passed
Checking Fortinet_Factory.key integrity .....Passed
Checking Fortinet_CA2.cer integrity .....Passed
Checking Fortinet_Factory2.cer integrity .....Passed
Checking Fortinet_Factory2.cer key-pair integrity .....Passed
Checking Fortinet_Factory2.cer Serial-No. ....Passed
Checking Fortinet_Factory2.cer timeliness .....Passed
Checking Fortinet_Factory2.key integrity .....Passed
```

```
S524DF4K15000024 # diagnose hardware switchinfo l3-ip-mapping-table
Ip Addr      Intf  EgressObj  Mac      Static-ARP  VRF
111.222.1.1  39   100005  00:00:00:00:00:00  0          0
```

```
S524DF4K15000024 # diagnose hardware switchinfo l3-egress-table
L3 Egress entries: Max: 16384 Existing 6
Entry  Mac      Vlan  INTF  PORT  MOD  MPLS_LABEL  ToCpu  Drop  RefCount  L3MC
100002  00:00:00:00:00:00  4095   0     0     0       -1   yes   no     1     no
100003  00:00:00:00:00:00  4092   1     0     0       -1   yes   no     1     no
```

## diagnose

```
100004 00:00:00:00:00:00 4094 2 0 0 -1 yes no 1 no
100005 04:d5:90:97:e1:16 4094 2 0 0 -1 no no 1 no
100006 00:00:00:00:00:00 10 3 0 0 -1 yes no 1 no
```

```
S424EPTF19000004 # diagnose hardware usb
Alea II TRNG
EHCI Host Controller
Generic Platform OHCI controller
```

## diagnose ip address

Use these commands to manage IP addresses:

```
diagnose ip address add <interface_name> <IPv4_address> <IP_network_mask>
diagnose ip address delete <interface_name> <IPv4_address>
diagnose ip address flush
diagnose ip address list
```

Variable	Description
add <interface_name> <IPv4_address> <IP_network_mask>	Add an IPv4 address to the specified interface.
delete <interface_name> <IPv4_address>	Delete an IPv4 address from the specified interface.
flush	Delete all IP addresses.
list	List all IP addresses and which interfaces they are assigned to.

### Example output

```
S524DF4K15000024 # diagnose ip address list

IP=127.0.0.1->127.0.0.1/255.0.0.0 index=1 devname=lo
IP=192.168.1.99->192.168.1.99/255.255.255.0 index=2 devname=mgmt
IP=10.105.19.3->10.105.19.3/255.255.252.0 index=2 devname=mgmt
IP=170.38.65.1->170.38.65.1/255.255.255.0 index=71 devname=vlan35
IP=180.1.1.1->180.1.1.1/255.255.255.0 index=72 devname=vlan85
IP=127.0.0.1->127.0.0.1/255.0.0.0 index=73 devname=int1
IP=10.10.10.1->10.10.10.1/255.255.255.0 index=74 devname=vlan-8
IP=11.1.1.100->11.1.1.100/255.255.255.255 index=74 devname=vlan-8
```

## diagnose ip arp

Use these commands to manage the Address Resolution Protocol (ARP) table:

```
diagnose ip arp add <interface_name> <IPv4_address> <MAC_address>
```

```
diagnose ip arp delete <interface_name> <IPv4_address>
diagnose ip arp flush <interface_name>
diagnose ip arp list
```

Variable	Description
arp add <interface_name> <IPv4_address>	Add an Address Resolution Protocol (ARP) entry for the IP address on the specified interface.
arp delete <interface_name> <IPv4_address>	Delete an Address Resolution Protocol (ARP) entry for the IP address on the specified interface.
arp flush <interface_name>	Delete the ARP table for the specified interface.
arp list	Display the ARP table.

## Example output

```
S524DF4K15000024 # diagnose ip arp list
```

```
index=2 ifname=mgmt 10.105.16.1 90:6c:ac:15:2f:94 state=00000002 use=117606 confirm=537
update=67371 ref=1
index=70 ifname=internal 192.168.0.10 state=00000001 use=24 confirm=178601 update=124 ref=1
index=74 ifname=vlan-8 11.1.1.100 00:00:5e:00:01:05 (proxy)
```

## diagnose ip route

Use these commands to manage static routes and the routing table:

```
diagnose ip route add <interface_name> <IPv4_address> <IP_network_mask>
diagnose ip route delete <interface_name> <IPv4_address>
diagnose ip route flush
diagnose ip route list [<arguments>]
diagnose ip route verify <interface_name> <IPv4_address> <IP_network_mask>
```

Variable	Description
add <interface_name> <IPv4_address> <IP_network_mask>	Add a static route to the specified interface.
delete <interface_name> <IPv4_address>	Delete a static route from the specified interface.
flush	Delete the routing table.
list [<arguments>]	Display the routing table.
verify <interface_name> <IPv4_address> <IP_network_mask>	Verify a static route on the specified interface.

## Example output

```
S524DF4K15000024 # diagnose ip route list
```

```
tab=254 scope=0 type=1 proto=11 prio=0 0.0.0.0/0.0.0.0/0->0.0.0.0/0 pref=0.0.0.0
gwy=10.105.16.1 dev=2(mgmt)
tab=254 scope=253 type=1 proto=2 prio=0 0.0.0.0/0.0.0.0/0->10.10.10.0/24 pref=10.10.10.1
gwy=0.0.0.0 dev=74(vlan-8)
tab=254 scope=253 type=1 proto=2 prio=0 0.0.0.0/0.0.0.0/0->10.105.16.0/22 pref=10.105.19.3
gwy=0.0.0.0 dev=2(mgmt)
tab=254 scope=0 type=1 proto=11 prio=0 0.0.0.0/0.0.0.0/0->39.3.2.0/24 pref=0.0.0.0
gwy=180.1.1.2 dev=72(vlan85)
tab=254 scope=253 type=1 proto=2 prio=0 0.0.0.0/0.0.0.0/0->170.38.65.0/24 pref=170.38.65.1
gwy=0.0.0.0 dev=71(vlan35)
tab=254 scope=253 type=1 proto=2 prio=0 0.0.0.0/0.0.0.0/0->180.1.1.0/24 pref=180.1.1.1
gwy=0.0.0.0 dev=72(vlan85)
tab=254 scope=253 type=1 proto=2 prio=0 0.0.0.0/0.0.0.0/0->192.168.1.0/24 pref=192.168.1.99
gwy=0.0.0.0 dev=2(mgmt)
tab=255 scope=253 type=3 proto=2 prio=0 0.0.0.0/0.0.0.0/0->10.10.10.0/32 pref=10.10.10.1
gwy=0.0.0.0 dev=74(vlan-8)
tab=255 scope=254 type=2 proto=2 prio=0 0.0.0.0/0.0.0.0/0->10.10.10.1/32 pref=10.10.10.1
gwy=0.0.0.0 dev=74(vlan-8)
tab=255 scope=253 type=3 proto=2 prio=0 0.0.0.0/0.0.0.0/0->10.10.10.255/32 pref=10.10.10.1
gwy=0.0.0.0 dev=74(vlan-8)
tab=255 scope=253 type=3 proto=2 prio=0 0.0.0.0/0.0.0.0/0->10.105.16.0/32 pref=10.105.19.3
gwy=0.0.0.0 dev=2(mgmt)
tab=255 scope=254 type=2 proto=2 prio=0 0.0.0.0/0.0.0.0/0->10.105.19.3/32 pref=10.105.19.3
gwy=0.0.0.0 dev=2(mgmt)
tab=255 scope=253 type=3 proto=2 prio=0 0.0.0.0/0.0.0.0/0->10.105.19.255/32 pref=10.105.19.3
gwy=0.0.0.0 dev=2(mgmt)
tab=255 scope=254 type=2 proto=2 prio=0 0.0.0.0/0.0.0.0/0->11.1.1.100/32 pref=11.1.1.100
gwy=0.0.0.0 dev=74(vlan-8)
tab=255 scope=253 type=3 proto=2 prio=0 0.0.0.0/0.0.0.0/0->127.0.0.0/32 pref=127.0.0.1
gwy=0.0.0.0 dev=1(lo)
tab=255 scope=253 type=3 proto=2 prio=0 0.0.0.0/0.0.0.0/0->127.0.0.0/32 pref=127.0.0.1
gwy=0.0.0.0 dev=73(int1)
tab=255 scope=254 type=2 proto=2 prio=0 0.0.0.0/0.0.0.0/0->127.0.0.0/8 pref=127.0.0.1
gwy=0.0.0.0 dev=1(lo)
tab=255 scope=254 type=2 proto=2 prio=0 0.0.0.0/0.0.0.0/0->127.0.0.0/8 pref=127.0.0.1
gwy=0.0.0.0 dev=73(int1)
tab=255 scope=254 type=2 proto=2 prio=0 0.0.0.0/0.0.0.0/0->127.0.0.1/32 pref=127.0.0.1
gwy=0.0.0.0 dev=1(lo)
tab=255 scope=254 type=2 proto=2 prio=0 0.0.0.0/0.0.0.0/0->127.0.0.1/32 pref=127.0.0.1
gwy=0.0.0.0 dev=73(int1)
tab=255 scope=253 type=3 proto=2 prio=0 0.0.0.0/0.0.0.0/0->127.255.255.255/32 pref=127.0.0.1
gwy=0.0.0.0 dev=1(lo)
tab=255 scope=253 type=3 proto=2 prio=0 0.0.0.0/0.0.0.0/0->127.255.255.255/32 pref=127.0.0.1
gwy=0.0.0.0 dev=73(int1)
tab=255 scope=253 type=3 proto=2 prio=0 0.0.0.0/0.0.0.0/0->170.38.65.0/32 pref=170.38.65.1
gwy=0.0.0.0 dev=71(vlan35)
tab=255 scope=254 type=2 proto=2 prio=0 0.0.0.0/0.0.0.0/0->170.38.65.1/32 pref=170.38.65.1
gwy=0.0.0.0 dev=71(vlan35)
tab=255 scope=253 type=3 proto=2 prio=0 0.0.0.0/0.0.0.0/0->170.38.65.255/32 pref=170.38.65.1
gwy=0.0.0.0 dev=71(vlan35)
tab=255 scope=253 type=3 proto=2 prio=0 0.0.0.0/0.0.0.0/0->180.1.1.0/32 pref=180.1.1.1
gwy=0.0.0.0 dev=72(vlan85)
```

```

tab=255 scope=254 type=2 proto=2 prio=0 0.0.0.0/0.0.0.0/0->180.1.1.1/32 pref=180.1.1.1
gwy=0.0.0.0 dev=72(vlan85)
tab=255 scope=253 type=3 proto=2 prio=0 0.0.0.0/0.0.0.0/0->180.1.1.255/32 pref=180.1.1.1
gwy=0.0.0.0 dev=72(vlan85)
tab=255 scope=253 type=3 proto=2 prio=0 0.0.0.0/0.0.0.0/0->192.168.1.0/32 pref=192.168.1.99
gwy=0.0.0.0 dev=2(mgmt)
tab=255 scope=254 type=2 proto=2 prio=0 0.0.0.0/0.0.0.0/0->192.168.1.99/32 pref=192.168.1.99
gwy=0.0.0.0 dev=2(mgmt)
tab=255 scope=253 type=3 proto=2 prio=0 0.0.0.0/0.0.0.0/0->192.168.1.255/32
pref=192.168.1.99 gwy=0.0.0.0 dev=2(mgmt)

```

## diagnose ip router {bfd | bgp | isis | ospf | ospf6 | pim | pbr | rip | ripng | static | zebra}

Use these commands to display statistics for bidirectional forwarding detection (BFD), Border Gateway Protocol (BGP) routing, Intermediate System to Intermediate System Protocol (IS-IS) routing, open shortest path first (OSPF) routing for IPv4 traffic, OSPF routing for IPv6 traffic, Protocol Independent Multicast (PIM) routing, policy-based routing (PBR), Routing Information Protocol (RIP) routing for IPv4 traffic, RIP routing for IPv6 traffic, static routes, and core routing daemon:

```

diagnose ip router {bfd | bgp | isis | ospf | ospf6 | pim | pbr | rip | ripng | static |
zebra} cpu-usage
diagnose ip router {bfd | bgp | isis | ospf | ospf6 | pim | pbr | rip | ripng | static |
zebra} crash-backtrace-clear
diagnose ip router {bfd | bgp | isis | ospf | ospf6 | pim | pbr | rip | ripng | static |
zebra} crash-backtrace-read
diagnose ip router zebra fpm-counters clear
diagnose ip router zebra fpm-counters show
diagnose ip router {bfd | bgp | isis | ospf | ospf6 | pim | pbr | rip | ripng | static |
zebra} memory-usage
diagnose ip router {bfd | bgp | isis | ospf | ospf6 | pim | pbr | rip | ripng | static |
zebra} work-queues

```

Variable	Description
cpu-usage	Display statistics for CPU usage.
crash-backtrace-clear	Delete the crash-backtrace information.
crash-backtrace-read	Display the crash-backtrace information.
fpm-counters clear	Erase the hardware offload counters.
fpm-counters show	Display the hardware offload counters.
memory-usage	Display statistics for memory usage.
work-queues	Display information about work queues.



## diagnose ip router command

Use these commands to send commands to various daemons in enable mode (cmd) or in configure terminal mode (cmd-conf-term):

```
diagnose ip router command bfd {cmd <arguments>| cmd-conf-term <arguments>}
diagnose ip router command bgp {cmd <arguments>| cmd-conf-term <arguments>}
diagnose ip router command isis {cmd <arguments>| cmd-conf-term <arguments>}
diagnose ip router command ospf {cmd <arguments>| cmd-conf-term <arguments>}
diagnose ip router command ospf6 {cmd <arguments>| cmd-conf-term <arguments>}
diagnose ip router command pim {cmd <arguments>| cmd-conf-term <arguments>}
diagnose ip router command rip {cmd <arguments>| cmd-conf-term <arguments>}
diagnose ip router command static {cmd <arguments>| cmd-conf-term <arguments>}
diagnose ip router command zebra {cmd <arguments>| cmd-conf-term <arguments>}
```

## diagnose ip router fwd

Use these commands for debugging layer-3 forwarding:

```
diagnose ip router fwd l3-clear-stats
diagnose ip router fwd l3-disable-ip-tracing
diagnose ip router fwd l3-ecmp
diagnose ip router fwd l3-egress
diagnose ip router fwd l3-enable-ip-tracing <IP_address>
diagnose ip router fwd l3-enable-ip-tracing6 <IPv6_address>
diagnose ip router fwd l3-intf
diagnose ip router fwd l3-stats
```

Variable	Description
l3-clear-stats	Delete layer-3 statistics.
l3-disable-ip-tracing	Disable IP tracing.
l3-ecmp	Display information about equal cost multi-path (ECMP) routing.
l3-egress	Display layer-3 egress information.
l3-enable-ip-tracing <IP_address>	Enable IPv4 host tracing
l3-enable-ip-tracing6 <IPv6_address>	Enable IPv6 host tracing.
l3-intf	Display information about layer-3 interfaces.
l3-stats	Display layer-3 statistics.

## diagnose ip router process show

Use this command to display information about the process launch of the core routing daemon, static routing daemon, BGD daemon, OSPF (IPv4 and IPv6) daemons, BFD daemon, RIP daemon, IS-IS daemon, and PIM daemon:

```
diagnose ip router process show
```

## diagnose ip router terminal-monitor

Use this command to enable or disable the display of router information on the terminal:

```
diagnose ip router terminal-monitor {enable | disable}
```

## diagnose ip rtcache list

Use this command to list the routing cache:

```
diagnose ip rtcache list
```

## diagnose ip rules list

Use this command to list IP rules.

```
diagnose ip rules list
```

### Example

```
S524DF4K15000024 # diagnose ip rules list
tab=0 fam=2 action=1 flags: 0x0 prio=1000 src=0.0.0.0/0 dst=0.0.0.0/0 table=(0)
tab=0 fam=2 action=7 flags: 0x0 prio=2000 src=0.0.0.0/0 dst=0.0.0.0/0 table=(0)
tab=255 fam=2 action=1 flags: 0x0 prio=32765 src=0.0.0.0/0 dst=0.0.0.0/0 table=(255)
tab=254 fam=2 action=1 flags: 0x0 prio=32766 src=0.0.0.0/0 dst=0.0.0.0/0 table=(254)
tab=253 fam=2 action=1 flags: 0x0 prio=32767 src=0.0.0.0/0 dst=0.0.0.0/0 table=(253)
```

## diagnose ip tcp

Use this command to list or clear the TCP sockets:

```
diagnose ip tcp {list | flush}
```

## Example

```
S524DF4K15000024 # diagnose ip tcp list
```

```
sl  local_address rem_address  st tx_queue rx_queue tr tm->when retrnsmt  uid  timeout
inode
0: 00000000:03E8 00000000:0000 0A 00000000:00000000 00:00000000 00000000  0      0 3099
1 e647d300 100 0 0 10 -1
1: 00000000:0A29 00000000:0000 0A 00000000:00000000 00:00000000 00000000  0      0 1587
1 e647c000 100 0 0 10 -1
2: 00000000:0A2A 00000000:0000 0A 00000000:00000000 00:00000000 00000000  0      0 3338
1 e647dc80 100 0 0 10 -1
3: 00000000:03EB 00000000:0000 0A 00000000:00000000 00:00000000 00000000  0      0 3103
1 e647d7c0 100 0 0 10 -1
...
```

## diagnose ip udp

Use this command to list or clear the UDP sockets:

```
diagnose ip udp {list | flush}
```

## Example

```
S524DF4K15000024 # diagnose ip udp list
```

```
sl  local_address rem_address  st tx_queue rx_queue tr tm->when retrnsmt  uid  timeout
inode ref pointer drops
24: 00000000:E818 00000000:0000 07 00000000:00000000 00:00000000 00000000  0      0
4097 2 e69e38c0 0
53: 00000000:0035 00000000:0000 07 00000000:00000000 00:00000000 00000000  0      0
1972 2 e6029440 0
67: 00000000:0043 00000000:0000 07 00000000:00000000 00:00000000 00000000  0      0 964
2 e5fd2d80 0
67: 00000000:0043 00000000:0000 07 00000000:00000000 00:00000000 00000000  0      0 963
2 e5fd2b40 0
68: 00000000:0044 00000000:0000 07 00000000:00000000 00:00000000 00000000  0      0
1961 2 e6029200 0
181: 00000000:90B5 00000000:0000 07 00000000:00000000 00:00000000 00000000  0      0
7681206 2 e6b94b40 0
350: 00000000:C15E 00000000:0000 07 00000000:00000000 00:00000000 00000000  0      0
3301 2 e69e2b40 0
370: 0100007F:1972 00000000:0000 07 00000000:00000000 00:00000000 00000000  0      0
1793 2 e6028fc0 0
404: 00000000:B994 00000000:0000 07 00000000:00000000 00:00000000 00000000  0      0
112 2 e5fd2000 0
415: 00000000:859F 00000000:0000 07 00000000:00000000 00:00000000 00000000  0      0
11905 2 e5fd38c0 0
415: 00000000:C99F 00000000:0000 07 00000000:00000000 00:00000000 00000000  0      0
3113 2 e6029d40 0
450: 00000000:E9C2 00000000:0000 07 00000000:00000000 00:00000000 00000000  0      0
157 2 e5fd2480 0
520: 00000000:0208 00000000:0000 07 00000000:00000000 00:00000000 00000000  0      0
```

```

2196 2 e5fd3680 0
546: 00000000:CA22 00000000:0000 07 00000000:00000000 00:00000000 00000000 0 0
2156 2 e5fd3440 0
549: 00000000:9225 00000000:0000 07 00000000:00000000 00:00000000 00000000 0 0
2057 2 e5fd2fc0 0
653: 00000000:AE8D 00000000:0000 07 00000000:00000000 00:00000000 00000000 0 0
775 2 e5fd2900 0
654: 00000000:B68E 00000000:0000 07 00000000:00000000 00:00000000 00000000 0 0
1977 2 e6029b00 0
688: 00000000:12B0 00000000:0000 07 00000000:00000000 00:00000000 00000000 0 0
3321 2 e69e2fc0 0
712: 00000000:0EC8 00000000:0000 07 00000000:00000000 00:00000000 00000000 0 0
3320 2 e69e2d80 0
713: 00000000:0EC9 00000000:0000 07 00000000:00000000 00:00000000 00000000 0 0
3322 2 e69e3200 0
763: 00000000:92FB 00000000:0000 07 00000000:00000000 00:00000000 00000000 0 0
9848617 2 e6ad7200 0
788: 0100007F:0714 00000000:0000 07 00000000:00000000 00:00000000 00000000 0 0
3224 2 e69e2240 0
805: 0100007F:A725 0100007F:0714 01 00000000:00000000 00:00000000 00000000 0 0
3292 2 e69e2900 0
882: 00000000:8372 00000000:0000 07 00000000:00000000 00:00000000 00000000 0 0
1974 2 e60298c0 0
972: 00000000:B7CC 00000000:0000 07 00000000:00000000 00:00000000 00000000 0 0
3260 2 e69e26c0 0
981: 00000000:EBD5 00000000:0000 07 00000000:00000000 00:00000000 00000000 0 0
39752 2 e69e3b00 0
990: 00000000:BBDE 00000000:0000 07 00000000:00000000 00:00000000 00000000 0 0
4357 2 e69e3d40 0

```

## diagnose ipv6 address

Use these commands to manage IPv6 addresses:

```

diagnose ipv6 address add <interface_name> <IPv6_address>
diagnose ipv6 address anycast <arguments>
diagnose ipv6 address delete <interface_name> <IPv6_address>
diagnose ipv6 address flush
diagnose ipv6 address list
diagnose ipv6 address multicast <interface_name> <IPv6_address>

```

Variable	Description
add <interface_name> <IPv6_address>	Add an IPv6 address to the specified interface. Use the following format for the IPv6 address: xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxx
anycast <arguments>	Add an IPv6 anycast address.
delete <interface_name> <IPv4_address>	Delete an IPv6 address from the specified interface. Use the following format for the IPv6 address: xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxx

Variable	Description
flush	Delete all IPv6 addresses.
list	List all IPv6 addresses and which interfaces they are assigned to.
multicast <interface_name> <IPv6_address>	Add an IPv6 multicast address to the specified interface. Use the following format for the IPv6 address: xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx/xxx

## Example output

```
S524DF4K15000024 # diagnose ipv6 address list
```

```
dev=1 devname=lo flag=P scope=254 prefix=128 addr>::1 preferred=-1 valid=-1
dev=2 devname=mgmt flag=P scope=253 prefix=64 addr=fe80::a5b:eff:fe1:95e4 preferred=-1
valid=-1
dev=70 devname=internal flag=P scope=253 prefix=64 addr=fe80::a5b:eff:fe1:95e5 preferred=-1
valid=-1
dev=71 devname=vlan35 flag=P scope=253 prefix=64 addr=fe80::a5b:eff:fe1:95e5 preferred=-1
valid=-1
dev=72 devname=vlan85 flag=P scope=253 prefix=64 addr=fe80::a5b:eff:fe1:95e5 preferred=-1
valid=-1
dev=74 devname=vlan-8 flag=P scope=253 prefix=64 addr=fe80::a5b:eff:fe1:95e5 preferred=-1
valid=-1
```

## diagnose ipv6 devconf

Use these commands to configure IPv6 devices:

```
diagnose ipv6 address devconf accept-dad {0 | 1 | 2}
diagnose ipv6 address devconf disable_ipv6 {0 | 1 }
```

Variable	Description
accept-dad {0   1   2}	Configure the detection of duplicate IPv6 address: <ul style="list-style-type: none"> <li>0 — disable duplicate address detection.</li> <li>1 — enable duplicate address detection.</li> <li>2 — enable duplicate address detection and disable IPv6 operation if duplicate MAC-based link-local addresses are found.</li> </ul>
disable_ipv6 {0   1 }	Configure IPv6 operation: <ul style="list-style-type: none"> <li>0 — enable IPv6 operation.</li> <li>1 — disable IPv6 operation.</li> </ul>

## diagnose ipv6 ipv6-tunnel

Use these commands to manage IPv6 tunnels:

```

diagnose ipv6 ipv6-tunnel add <tunnel_name> <interface_name> <source_IPv6_address>
    <destination_IPv6_address>
diagnose ipv6 ipv6-tunnel delete <tunnel_name>
diagnose ipv6 ipv6-tunnel list

```

Variable	Description
add <tunnel_name> <interface_name> <source_IPv6_address> <destination_IPv6_address>	Create a tunnel between two IPv6 addresses on the specified interface. Use the following format for the IPv6 addresses: xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx:xxxx
delete <tunnel_name>	Delete the specified IPv6 tunnel.
delete <interface_name> <IPv4_address>	List all IPv6 tunnels.

## Example output

```

S524DF4K15000024 # diagnose ipv6 ipv6-tunnel list

sys_list_tunnel6:233 not implemented

```

## diagnose ipv6 neighbor-cache

Use these commands to manage the IPv6 Address Resolution Protocol (ARP) table:

```

diagnose ipv6 neighbor-cache add <interface_name> <IPv6_address> <MAC_address>
diagnose ipv6 neighbor-cache delete <interface_name> <IPv4_address>
diagnose ipv6 neighbor-cache flush <interface_name>
diagnose ipv6 neighbor-cache list

```

Variable	Description
add <interface_name> <IPv6_address>	Add an ARP entry for the IPv6 address on the specified interface.
delete <interface_name> <IPv6_address>	Delete an ARP entry for the IPv6 address on the specified interface.
flush <interface_name>	Delete the ARP table for the specified interface.
list	Display the ARP table.

## Example output

```

S524DF4K15000024 # diagnose ipv6 neighbor-cache list

ifindex=1 ifname=lo :: 00:00:00:00:00:00 state=00000040 use=1096280 confirm=1102281
update=1096280 ref=6

```

## diagnose ipv6 route

Use these commands to manage the IPv6 routing table:

```
diagnose ipv6 route flush
diagnose ipv6 route list
```

Variable	Description
flush	Delete the routing table.
list	Display the routing table.

### Example output

```
S524DF4K15000024 # diagnose ipv6 route list

type=02 protocol=unspec flag=00000000 oif=1(lo) dst:::1/128 gwy::: prio=0
type=02 protocol=unspec flag=00000000 oif=1(lo) dst:fe80::a5b:eff:fe1:95e4/128 gwy:::
prio=0
type=02 protocol=unspec flag=00000000 oif=1(lo) dst:fe80::a5b:eff:fe1:95e5/128 gwy:::
prio=0
type=02 protocol=unspec flag=00000000 oif=1(lo) dst:fe80::a5b:eff:fe1:95e5/128 gwy:::
prio=0
type=02 protocol=unspec flag=00000000 oif=1(lo) dst:fe80::a5b:eff:fe1:95e5/128 gwy:::
prio=0
type=02 protocol=unspec flag=00000000 oif=1(lo) dst:fe80::a5b:eff:fe1:95e5/128 gwy:::
prio=0
type=01 protocol=kernel flag=00000000 oif=70(internal) dst:fe80::/64 prio=100
type=01 protocol=kernel flag=00000000 oif=74(vlan-8) dst:fe80::/64 prio=100
type=01 protocol=kernel flag=00000000 oif=71(vlan35) dst:fe80::/64 prio=100
type=01 protocol=kernel flag=00000000 oif=72(vlan85) dst:fe80::/64 prio=100
type=01 protocol=kernel flag=00000000 oif=2(mgmt) dst:fe80::/64 prio=100
type=01 protocol=boot flag=00000000 oif=70(internal) dst:ff00::/8 prio=100
type=01 protocol=boot flag=00000000 oif=74(vlan-8) dst:ff00::/8 prio=100
type=01 protocol=boot flag=00000000 oif=71(vlan35) dst:ff00::/8 prio=100
type=01 protocol=boot flag=00000000 oif=72(vlan85) dst:ff00::/8 prio=100
type=01 protocol=boot flag=00000000 oif=2(mgmt) dst:ff00::/8 prio=100
type=07 protocol=kernel flag=00000000 oif=73(int1) prio=ffffffff
```

## diagnose ipv6 sit-tunnel

Use these commands to manage IPv4 tunnels:

```
diagnose ipv6 sit-tunnel add <tunnel_name> <interface_name> <source_IPv4_address>
<destination_IPv4_address>
diagnose ipv6 sit-tunnel delete <tunnel_name>
diagnose ipv6 sit-tunnel list
```

Variable	Description
add <tunnel_name> <interface_name> <source_IPv4_address> <destination_IPv4_address>	Create a tunnel between two IPv4 addresses on the specified interface. Use the following format for the IPv4 addresses: XXX.XXX.XXX.XXX
delete <tunnel_name>	Delete the specified IPv4 tunnel.
delete <interface_name> <IPv4_address>	List all IPv4 tunnels.

## Example output

```
S524DF4K15000024 # diagnose ipv6 sit-tunnel list

sys_list_tunnel6:263 not implemented
```

## diagnose log alertconsole

Use the following commands to manage alert console messages:

```
diagnose log alertconsole clear
diagnose log alertconsole fgd-retrieve
diagnose log alertconsole list
diagnose log alertconsole test
```

Variable	Description
clear	Clear alert console messages.
fgd-retrieve	Retrieve FortiGuard alert console messages.
list	List current alert console messages.
test	Generate alert console messages.

## Example output

```
S524DF4K15000024 # diagnose log alertconsole list

There are 50 alert console messages:
2017-10-10 13:26:07 Administrator acmin login failed
2017-10-09 15:41:32 Firmware upgraded by admin
2017-09-29 15:14:11 Firmware upgraded by admin
2017-09-28 07:45:38 Administrator ERROR: Class:0; Subclass:10000; Ope login failed
2017-09-28 07:45:35 Administrator ERROR: Class:0; Subclass:10000; Ope login failed
2017-09-28 07:45:32 Administrator ERROR: Class:0; Subclass:10000; Ope login failed
2017-09-26 08:46:09 Firmware upgraded by admin
2017-09-21 16:16:59 Firmware upgraded by admin
2017-09-19 15:21:16 Administrator [3~[3~[3~ login failed
```



[illegible]

## diagnose loop-guard status

Use this command to display which ports have loop guard enabled:

```
diagnose loop-guard status
```

To enable loop guard on a port, see [config switch interface on page 104](#).

## Example output

```
S524DF4K15000024 # diagnose loop-guard status
```

Portname	State	Status	Timeout (m)	MAC-Move	Count	Last-Event
port1	disabled	-	-	-	-	-
port2	disabled	-	-	-	-	-
port3	disabled	-	-	-	-	-
port4	disabled	-	-	-	-	-
port5	disabled	-	-	-	-	-
port6	disabled	-	-	-	-	-
port7	disabled	-	-	-	-	-
port10	disabled	-	-	-	-	-
port11	disabled	-	-	-	-	-
port12	enabled	-	45	0	0	-
port13	disabled	-	-	-	-	-
port14	disabled	-	-	-	-	-
port15	disabled	-	-	-	-	-
port16	disabled	-	-	-	-	-
port17	disabled	-	-	-	-	-
port18	disabled	-	-	-	-	-
port19	disabled	-	-	-	-	-
port20	disabled	-	-	-	-	-
port21	enabled	-	45	50	0	-
port22	disabled	-	-	-	-	-
port24	disabled	-	-	-	-	-
port25	disabled	-	-	-	-	-
port26	disabled	-	-	-	-	-
port27	disabled	-	-	-	-	-
port28	disabled	-	-	-	-	-
port29	disabled	-	-	-	-	-
port30.1	disabled	-	-	-	-	-
port30.2	disabled	-	-	-	-	-
port30.3	disabled	-	-	-	-	-
port30.4	disabled	-	-	-	-	-
G100D3G15817028	disabled	-	-	-	-	-

## diagnose option82-mapping relay

Use this command to display the option-82 setting for DHCP relay for each valid system interface:

```
diagnose option82-mapping relay <valid_system_interface>
```

### Example output

```
S524DF4K15000024 # diagnose option82-mapping relay internal
```

```
Interface Name Remote-ID(hex) Circuit-ID(hex)
internal 085B0EF195E5 00000000
```

## diagnose option82-mapping snooping

Use this command to display the option-82 settings for DHCP snooping for a specific VLAN and FortiSwitch interface:

```
diagnose option82-mapping snooping <VLAN_ID> <valid_switch_interface>
```

### Example output

```
S524DF4K15000024 # diagnose option82-mapping snooping 100 port2
```

```
Interface Name Remote-ID(hex) Circuit-ID(hex)
port2 085B0EF195E5 00640102
```

## diagnose settings

Use these commands to manage diagnostic settings:

```
diagnose settings info
diagnose settings reset
```

Variable	Description
info	List all diagnostic settings.
reset	Reset all diagnostic settings to their default settings.

### Example output

```
S524DF4K15000024 # diagnose settings info
```

```
debug output:          disable
console timestamp:      disable
console no user log message:  disable
fsmgr debug level:      16 (0x10)
CLI debug level:        3
```

## diagnose sniffer packet

Use this command to examine packets received on a specific interface:

```
diagnose sniffer packet <interface_name | any> <logical_filter | none> <verbose | 1-6>
                        <sniffer_count> <timestamp_format>
```

Variable	Description
<interface_name   any>	Enter the name of a network interface or enter <code>any</code> to examine packets received on all interfaces.
<logical_filter   none>	<p>Enter a logical filter or <code>none</code>. Use the following format for the filter:</p> <pre>'[[src dst] host&lt;IP_address&gt;] [[src dst] host&lt;IP_address&gt;] [[arp ip gre esp udp tcp] [port_number]] [[arp ip gre esp udp tcp] [port_number]]'</pre> <p>For example, to examine UDP packets received at port 1812 from host <code>forti1</code> and host <code>forti2</code> or <code>forti3</code>:</p> <pre>'udp and port 1812 and host forti1 and \( forti2 or forti3 \)'</pre> <p>To examine TCP packets between two PCs through port 80:</p> <pre>diag sniffer packet internal 'host 192.168.0.130 and 192.168.0.1 and tcp port 80' 1</pre> <p>To examine packets with the RST flag set:</p> <pre>diagnose sniffer packet internal "tcp[13] &amp; 4 != 0"</pre> <p>To examine packets with the destination MAC address of <code>00:09:0f:89:10:ea</code>:</p> <pre>diagnose sniffer packet internal "(ether [0:4]=0x00090f89) and (ether[4:2]=0x10ea)"</pre>
<verbose   1-6>	<p>Set the level of detail for the results:</p> <ul style="list-style-type: none"> <li>• <code>verbose</code> — Display all details.</li> <li>• <code>1</code> — Include the packet header.</li> <li>• <code>2</code> — Include the packet header and IP address data.</li> <li>• <code>3</code> — Include the packet header and Ethernet address data (if available).</li> <li>• <code>4</code> — Include the packet header and interface name.</li> <li>• <code>5</code> — Include the packet header, interface name, and IP address data.</li> <li>• <code>6</code> — Include the packet header, interface name, and Ethernet address data (if available).</li> </ul>
<sniffer_count>	Enter the number of packets to examine.
<timestamp_format>	Enter <code>a</code> for UTC time ( <code>yyyy-mm-dd hh:mm:ss.ms</code> ) or enter the number of minutes and seconds after the start of the packet examination ( <code>ss.ms</code> ).

## Example output

```
S524DF4K15000024 # diagnose sniffer packet any
interfaces=[any]
filters=[none]
0.977537 arp who-has 192.168.0.10 tell 192.168.1.99
0.977755 127.0.0.1 -> 0.0.0.0: icmp: type-#20
1.057565 224.0.0.18 -> 33.5.255.1: ip-proto-10 (frag 65392:4294967276@1336+)
```

```

1.057578 802.1Q vlan#8 P0 -- 224.0.0.18 -> 33.5.255.1: ip-proto-10 (frag
65392:4294967276@1336+)
1.113131 arp who-has 10.105.16.1 tell 10.105.19.8
1.977047 arp who-has 192.168.0.10 tell 192.168.1.99
1.990059 127.0.0.1 -> 0.0.0.0: icmp: type-#20
...

S524DF4K15000024 # diagnose sniffer packet internal none verbose
interfaces=[internal]
filters=[none]
pcap_lookupnet: internal: no IPv4 address assigned
0.840645 802.1Q vlan#8 P0 -- 10.10.10.1 -> 224.0.0.18: ip-proto-112 20
1.113149 arp who-has 192.168.0.10 tell 192.168.1.99
1.850162 802.1Q vlan#8 P0 -- 10.10.10.1 -> 224.0.0.18: ip-proto-112 20
2.109899 arp who-has 192.168.0.10 tell 192.168.1.99
2.859653 802.1Q vlan#8 P0 -- 10.10.10.1 -> 224.0.0.18: ip-proto-112 20
3.109412 arp who-has 192.168.0.10 tell 192.168.1.99
3.869169 802.1Q vlan#8 P0 -- 10.10.10.1 -> 224.0.0.18: ip-proto-112 20
4.128948 arp who-has 192.168.0.10 tell 192.168.1.99
...

S524DF4K15000024 # diagnose sniffer packet internal none 3 10 a
interfaces=[internal]
filters=[none]
pcap_lookupnet: internal: no IPv4 address assigned
2017-10-11 16:09:42.393816 arp who-has 192.168.0.10 tell 192.168.1.99
0x0000 ffff ffff ffff 085b 0ef1 95e5 0806 0001 .....[.....
0x0010 0800 0604 0001 085b 0ef1 95e5 c0a8 0163 .....[.....c
0x0020 0000 0000 0000 c0a8 000a .....

2017-10-11 16:09:42.483785 802.1Q vlan#8 P0 -- 10.10.10.1 -> 224.0.0.18: ip-proto-112 20
0x0000 0100 5e00 0012 0000 5e00 0105 8100 0008 ..^.....^.....
0x0010 0800 45c0 0028 8fec 0000 ff70 369c 0a0a ..E..(.....p6...
0x0020 0a01 e000 0012 2105 ff01 0001 d392 0b01 .....!.....
0x0030 0164 0000 0000 0000 0000 .....d.....
...

```

## diagnose snmp

Use these commands to display SNMP information:

```

diagnose snmp ip frags
diagnose snmp trap send

```

Variable	Description
ip frags	Display fragmentation and reassembly information
trap send	Generate a trap event and send it to the SNMP daemon.

## Example output

```
S524DF4K15000024 # diagnose snmp ip frags
```

```
ReasmTimeout = 0
ReasmReqds   = 0
ReasmOKs     = 0
ReasmFails   = 0
FragOKs      = 0
FragFails    = 0
FragCreates  = 0
```

## diagnose stp instance list

Use this command to display information about Multiple Spanning Tree Protocol (MSTP) instances:

```
diagnose stp instance list <STP_ID> <port_number>
```

To create an STP instance, see [config switch stp instance on page 147](#).

Variable	Description
<STP_ID>	Enter the STP identifier. If you enter a higher number than the valid range, the results for all STP instances are displayed. If no STP identifier is specified, results for all STP instances are displayed.
<port_number>	Enter the port number. If no port number is specified, results for all physical ports are displayed.

## Example output

```
S524DF4K15000024 # diagnose stp instance list 0
```

MST Instance Information, primary-Channel:

```
Instance ID 0 (CST)
Config      Priority 32768
            Bridge MAC 085b0ef195e4, MD5 Digest 40d5eca178c657835c83bbcb16723192

Root        MAC 085b0ef195e4, Priority 32768, Path Cost 0, Remaining Hops 20
            (This bridge is the root)

Regional Root MAC 085b0ef195e4, Priority 32768, Path Cost 0
            (This bridge is the regional root)

Active Times Forward Time 15, Max Age 20, Remaining Hops 20
```

TCN Events      Triggered 1 (1d 0h 19m 56s ago), Received 0 (1d 0h 19m 56s ago)

Port Flags	Speed	Cost	Priority	Role	State	HelloTime
port1	-	200000000	128	DISABLED	DISCARDING	2
EN ED						
port3	-	200000000	128	DISABLED	DISCARDING	2
EN ED						
port4	-	200000000	128	DISABLED	DISCARDING	2
EN ED						
port5	-	200000000	128	DISABLED	DISCARDING	2
EN ED						
port6	-	200000000	128	DISABLED	DISCARDING	2
EN ED						
port7	-	200000000	128	DISABLED	DISCARDING	2
EN ED						
port8	-	200000000	128	DISABLED	DISCARDING	2
EN ED						
port9	-	200000000	128	DISABLED	DISCARDING	2
EN ED						
port10	-	200000000	128	DISABLED	DISCARDING	2
EN ED						
port11	-	200000000	128	DISABLED	DISCARDING	2
EN ED						
port12	-	200000000	128	DISABLED	DISCARDING	2
EN ED						
port13	-	200000000	128	DISABLED	DISCARDING	2
EN ED						
port14	-	200000000	128	DISABLED	DISCARDING	2
EN ED						
port17	-	200000000	128	DISABLED	DISCARDING	2
EN ED						
port18	-	200000000	128	DISABLED	DISCARDING	2
EN ED						
port19	-	200000000	128	DISABLED	DISCARDING	2
EN ED						
port20	-	200000000	128	DISABLED	DISCARDING	2
EN ED						
port21	-	200000000	128	DISABLED	DISCARDING	2
EN ED						
port22	-	200000000	128	DISABLED	DISCARDING	2
EN ED						
port23	-	200000000	128	DISABLED	DISCARDING	2
EN ED						
port24	-	200000000	128	DISABLED	DISCARDING	2
EN ED						

## diagnose

port25	-	200000000	128	DISABLED	DISCARDING	2
EN ED						
port26	-	200000000	128	DISABLED	DISCARDING	2
EN ED						
port27	-	200000000	128	DISABLED	DISCARDING	2
EN ED						
port28	-	200000000	128	DISABLED	DISCARDING	2
EN ED						
port29	-	200000000	128	DISABLED	DISCARDING	2
EN ED						
port30	-	200000000	128	DISABLED	DISCARDING	2
EN ED						
internal	1G	20000	128	DESIGNATED	FORWARDING	2
ED						
Mclag-icl-trunk	-	200000000	128	DISABLED	DISCARDING	2
ED						
first-mclag	-	200000000	128	DISABLED	DISCARDING	2
EN ED						

Flags: EN(STP enable), ED(Edge), LP(Loop Protection), RG(Root Guard Triggered), BG(BPDU Guard Triggered)

## diagnose stp mst-config list

Use this command to display the MSTP configuration:

```
diagnose snmp mst-config list
```

To configure an MSTP instance, see [config switch stp settings on page 148](#).

### Example output

```
S524DF4K15000024 # diagnose stp mst-config list
```

MST Configuration Identification Information

```
Unit: primary
MST Configuration Name: region1
MST Configuration Revision: 1
MST Configuration Digest: ac36177f50283cd4b83821d8ab26de62
```

Instance ID	Mapped VLANs	Priority
0		32768
1		8192



## diagnose stp rapid-pvst-port

Use these commands to diagnose the interoperability with per-VLAN RSTP (Rapid PVST+ or RPVST+):

```
diagnose stp rapid-pvst-port clear [<port_name>]
diagnose stp rapid-pvst-port list [<port_name>]
```

Variable	Description
clear [<port_name>]	Clear all flags and timers on the RPVST+ port.
list [<port_name>]	Show the status of one port or all ports. If any of the ports is in the “IC” state, the command output gives the reason: VLAN priority inconsistent, VLAN configuration mismatch, or both.

## diagnose stp vlan list

Use this command to display the MSTP information for a specific VLAN:

```
diagnose stp vlan list <VLAN_ID>
```

Variable	Description
<VLAN_ID>	Enter the VLAN identifier. The value range is 1-4095.

### Example output

```
S524DF4K15000024 # diagnose stp vlan list 10
```

```
MST Instance Information, primary-Channel:
```

```
Instance ID : 0
```

```
Switch Priority : 32768
```

```
Root MAC Address : 085b0ef195e4
```

```
Root Priority: 32768
```

```
Root Pathcost: 0
```

```
Regional Root MAC Address : 085b0ef195e4
```

```
Regional Root Priority: 32768
```

```
Regional Root Path Cost: 0
```

```
Remaining Hops: 20
```

```
This Bridge MAC Address : 085b0ef195e4
```

```
This bridge is the root
```

Port	Speed	Cost	Priority	Role	State	Edge	STP-
Status	Loop Protection						

port1	-	200000000	128	DISABLED	DISCARDING	YES	
ENABLED	NO						
port2	-	200000000	128	DISABLED	DISCARDING	YES	
ENABLED	NO						
port3	-	200000000	128	DISABLED	DISCARDING	YES	
ENABLED	NO						
port4	-	200000000	128	DISABLED	DISCARDING	YES	
ENABLED	NO						
port5	-	200000000	128	DISABLED	DISCARDING	YES	
ENABLED	NO						
port6	-	200000000	128	DISABLED	DISCARDING	YES	
ENABLED	NO						
port9	-	200000000	128	DISABLED	DISCARDING	YES	
ENABLED	NO						
port10	-	200000000	128	DISABLED	DISCARDING	YES	
ENABLED	NO						
port11	-	200000000	128	DISABLED	DISCARDING	YES	
ENABLED	NO						
port12	-	200000000	128	DISABLED	DISCARDING	YES	
ENABLED	NO						
port13	-	200000000	128	DISABLED	DISCARDING	YES	
ENABLED	NO						
port14	-	200000000	128	DISABLED	DISCARDING	YES	
ENABLED	NO						
port15	-	200000000	128	DISABLED	DISCARDING	YES	
ENABLED	NO						
port16	-	200000000	128	DISABLED	DISCARDING	YES	
ENABLED	NO						
port17	-	200000000	128	DISABLED	DISCARDING	YES	
ENABLED	NO						
port18	-	200000000	128	DISABLED	DISCARDING	YES	
ENABLED	NO						
port19	-	200000000	128	DISABLED	DISCARDING	YES	
ENABLED	NO						
port20	-	200000000	128	DISABLED	DISCARDING	YES	
ENABLED	NO						
port21	-	200000000	128	DISABLED	DISCARDING	YES	
ENABLED	NO						
port22	-	200000000	128	DISABLED	DISCARDING	YES	
ENABLED	NO						
port23	-	200000000	128	DISABLED	DISCARDING	YES	
ENABLED	NO						
port24	-	200000000	128	DISABLED	DISCARDING	YES	
ENABLED	NO						
port25	-	200000000	128	DISABLED	DISCARDING	YES	
ENABLED	NO						

port26	-	200000000	128	DISABLED	DISCARDING	YES
ENABLED	NO					
port27	-	200000000	128	DISABLED	DISCARDING	YES
ENABLED	NO					
port28	-	200000000	128	DISABLED	DISCARDING	YES
ENABLED	NO					
port29	-	200000000	128	DISABLED	DISCARDING	YES
ENABLED	NO					
port30	-	200000000	128	DISABLED	DISCARDING	YES
ENABLED	NO					
internal	1G	20000	128	DESIGNATED	FORWARDING	YES
DISABLED	NO					

## diagnose switch 802-1x status

Use this command to display the status of a port using IEEE 802.1x authentication:

```
diagnose switch 802-1x status [<port_name>]
```

Variable	Description
[<port_name>]	Enter the port name. If the port is not specified, the status of all 802.1x-authenticated ports is returned. In the output, the value in the “Traffic-Vlan” column is the VLAN where the client was successfully authenticated.

To enable IEEE 802.1x authentication on a port, see [config switch interface on page 104](#).

### Example output

```
S548DF4K15000195 # diagnose switch 802-1x status
```

```

port3 : Mode: mac-based (mac-by-pass disable)
Link: Link up
Port State: authorized: ( )
EAP pass-through : Enable
EAP auto-untagged-vlans : Disable
Quarantine VLAN (4093) detection : Enable
Native Vlan : 10
Allowed Vlan list: 10,15
Untagged Vlan list: 10
Guest VLAN :
Auth-Fail Vlan :

Switch sessions 2/240, Local port sessions:2/20
Client MAC Type           Traffic-Vlan      Dynamic-Vlan
94:10:3e:b9:12:65 802.1x          10               0
cc:5a:53:5f:d5:16 802.1x          10               15

```

Sessions info:

```
94:10:3e:b9:12:65 Type=802.1x,TLS,state=AUTHENTICATED,etime=0,eap_cnt=8 params:reAuth=3600
cc:5a:53:5f:d5:16 Type=802.1x,TLS,state=AUTHENTICATED,etime=0,eap_cnt=7 params:reAuth=3600
```

## diagnose switch 802-1x status-dacl

Use this command to display the status of dynamic access control lists (DACLs) on 802.1x ports:

```
diagnose switch 802-1x status-dacl [<port_name>]
```

Variable	Description
[<port_name>]	Enter the port name. If the port is not specified, the status of all ports is returned.

### Example output

```
S148FNTF20000098 # diagnose switch 802-1x status-dacl port11

port11: Mode: port-based (mac-by-pass disable)
DACL :enable: :
```

## diagnose switch acl counter

Use these commands to display information about access control lists (ACLs):

```
diagnose switch acl counter all
diagnose switch acl counter app <name>
diagnose switch acl counter id <policy_ID>
diagnose switch acl counter list-apps
```

Variable	Description
all	List all applications using ACL counters.
app <name>	List ACL counters for this application.
id <policy_ID>	List the ACL counter for this ACL policy identifier.
list-apps	List application names that use ACL counters.

### Example output

```
S524DF4K15000024 # diagnose switch acl counter list-apps

Application          Policy ID Range
-----
```

loop-gaurd	(2049-2049)
l3-arp-req	(2050-2050)
l3-arp-reply	(2051-2051)
dst-mac	(2052-2052)
bfd-single-hop	(2053-2053)
bfd-multi-hop	(2054-2054)
ospf	(2055-2055)
rip	(2056-2056)
mclag	(2057-2057)
mclag-l3-arp-req	(2058-2058)
mclag-l3-arp-reply	(2059-2059)
mclag-bfd-single-hop	(2060-2060)
mclag-bfd-multi-hop	(2061-2061)
mclag-ospf	(2062-2062)
mclag-rip	(2063-2063)
fortilink	(2064-2064)
fortilink-l	(2065-2065)
mclag-fortilink	(2066-2066)
mclag-icl	(2067-2067)
mac-sa-mcast	(2068-2068)
forti-trunk	(2069-2069)
vwire	(2304-2367)
vwire-acl	(2368-133503)
dhcp-snooping	(133504-141695)
arp-snooping	(141696-145792)
access-vlan	(145793-149889)
network-monitor	(149890-149930)

## diagnose switch acl hw-entry-index

**NOTE:** This command is available only for the FS-108E, FS-108E-POE, FS-108E-FPOE, FS-124E, FS-124E-POE, FS-124E-FPOE, FS-148E, and FS-148E-POE models.

Use this command to find the hardware mapping for the specified ACL policy identifier:

```
diagnose switch acl hw-entry-index <id>
```

Variable	Description
<id>	Enter the ACL policy identifier.

### Example output

```
S124EP4N17000016 # diagnose switch acl hw-entry-index 1
```

```
ID HW-INDEX AGG CNTR-IDX
```

---

```
000001 896 n 7
```

## diagnose switch acl schedule

Use this command to list ACL policies with a schedule:

```
diagnose switch acl schedule egress
diagnose switch acl schedule ingress
diagnose switch acl schedule prelookup
```

Variable	Description
egress	List all ACL egress policies with a schedule.
ingress	List all ACL ingress policies with a schedule.
prelookup	List all ACL prelookup policies with a schedule.

### Example output

```
S524DF4K15000024 # diagnose switch acl schedule ingress
ACL Ingress Name
1      In Schedule
```

## diagnose switch arp-inspection stats clear

Use this command to delete dynamic ARP inspection statistics:

```
diagnose switch arp-inspection stats clear <VLAN_ID>
```

Variable	Description
<VLAN_ID>	Enter a single VLAN identifier or a range of VLAN identifiers separated by commas. For example: 1,3-4,6,7,9-100

To enable dynamic ARP inspection on a VLAN, see [config switch vlan on page 153](#).

## diagnose switch cpuq

### NOTES:

- Be careful about changing the CPU queue rate because the change is made directly to the hardware.
- After the switch is rebooted, the CPU queue rate returns to the default value.
- For the FS-108E and FS-124E families, the configured CPU queue rate has a 16-kbps granularity. Use the `diagnose switch cpuq show` command to see the actual queue rate.
- For the FS-108E and FS-124E families, the CPU queue rate is more accurate with larger packets.

Use this command to display the CPU queue rate on the FSR-112D-POE, FS-1xxE, FS-2xx, FS-4xx, FS-5xx, FS-1xxx, and FS-3xxx families:

```
diagnose switch cpuq show
```

Use this command to change the CPU queue rate on the FSR-112D-POE, FS-2xx, FS-4xx, FS-5xx, FS-1xxx, and FS-3xxx families:

```
diagnose switch cpuq rate <queue_number> <new_pps_rate>
```

Use this command to change the CPU queue rate on the FS-108E and FS-124E families:

```
diagnose switch cpuq rate <queue_number> <new_Kbps_rate>
```

Variable	Description
show	Display the CPU queue rate for all queues.
rate <queue_number> <new_pps_rate>	Change the CPU queue rate for the specified queue to the new packets-per-second (PPS) rate.
diagnose switch cpuq rate <queue_number> <new_Kbps_rate>	Change the CPU queue rate for the specified queue to the new Kbps rate.

## Example output (FS-548)

**NOTE:** The number of queues, queue classifications, and default CPU queue rates can differ among the FortiSwitch platforms.

```
S548DF5018000776 # diagnose switch cpuq show
```

```

Queue  | Rate(pps)
-----
17      2000      (MIRROR/SFLOW)
18      500       (L3_DEST_MISS)
19      5000      (ARP_REQ)
20      10000     (DEFAULT)
21      1000      (NHOP)
22      8000      (DHCP/OSPF/BFD/RIP/IGMP/FORTLINK_VLAN)
23      6000      (ARP_REPLY)
24      5000      (FORTILINK/MCLAG)
25      1500      (BPDU/LOOPGUARD)
```

## diagnose switch egress list

Use this command to display the port egress map:

```
diagnose switch egress list <port_name>
```

Variable	Description
<port_name>	Enter the port name.

## Example output

```
S524DF4K15000024 # diagnose switch egress list port1
```

```
Switch Interface Egress Map, primary-Channel
```

Port Map: Name (Id) :

```

port1 (1)          port2 (2)          port3 (3)
port4 (4)          port5 (5)          port6 (6)
port7 (7)          port8 (8)          port9 (9)
port10 (10)        port11 (11)         port12 (12)
port13 (13)        port14 (14)         port15 (15)
port16 (16)        port17 (17)         port18 (18)
port19 (19)        port20 (20)         port21 (21)
port22 (22)        port23 (23)         port24 (24)
port25 (25)        port26 (26)         port27 (27)
port28 (28)        port29 (29)         port30 (30)
internal (31)
cpu0 (31)

```

Source Interface    Destination Ports

```

port1                    1-6, 9-31

```

## diagnose switch ip-mac-binding entry

Use this command to display the counters for an IP-MAC binding entry:

```
diagnose switch ip-mac-binding entry <entry_ID>
```

Variable	Description
<entry_ID>	Enter an IP-MAC binding entry identifier.

To enable IP-MAC binding, see [config switch global on page 97](#).

### Example output

```
S524DF4K15000024 # diagnose switch ip-mac-binding entry 1
```

```

Binding Entry: 1
Binding IP: 1.20.168.172 255.255.255.255
Binding MAC: 00:21:CC:D2:76:72
Status: Enabled
Statistic:
Permit packets: 0x00
Drop packets: 0x00
-----

```

## diagnose switch ip-source-guard hardware entry filter

Use these commands to select which IP source-guard entries to display:

```

diagnose switch ip-source-guard hardware entry filter clear
diagnose switch ip-source-guard hardware entry filter interface <interface_name>

```



```
diagnose switch ip-source-guard hardware entry filter ip <IPv4_address>
diagnose switch ip-source-guard hardware entry filter mac <MAC_address>
diagnose switch ip-source-guard hardware entry filter print
```

Variable	Description
clear	Remove the current filter.
interface <port_name>	Display entries for the specified port.
ip <IPv4_address>	Display entries for the specified IPv4 address.
mac <MAC_address> <mask>	Delete entries for the specified MAC address and mask.
print	Display the current filter.

## diagnose switch ip-source-guard hardware entry list

Use this command to display all IP source-guard entries. Static entries were manually added by the `config switch ip-source-guard` command. Dynamic entries were added by DHCP snooping.

```
diagnose switch ip-source-guard hardware entry list
```

## diagnose switch mac-address

Use these commands to manage the MAC address table:

```
diagnose switch mac-address delete {all | entry <xx:xx:xx:xx:xx:xx>}
diagnose switch mac-address filter clear
diagnose switch mac-address filter flags <flag bit pattern>
diagnose switch mac-address filter port-id-map <port-ID list>
diagnose switch mac-address filter show
diagnose switch mac-address filter trunk-id-map <trunk-ID list>
diagnose switch mac-address filter vlan-map <VLAN_list>
diagnose switch mac-address list
diagnose switch mac-address switch-port-macs-db
```

Variable	Description
delete {all   entry <xx:xx:xx:xx:xx:xx>}	Delete all MAC address entries or a specific MAC address entry.
filter clear	Delete the filter for the MAC address table list.
filter flags <flag bit pattern>	Specify the flag bit pattern to match. Use this pattern to mask important bits. This value is hexadecimal.
filter port-id-map <port-ID list>	List the port identifiers to display MAC addresses for. Separate the port identifiers with commas. For example: 1,3,5-17,19
filter show	Display the filter for the MAC address table list.

Variable	Description
filter trunk-id-map <trunk-ID list>	List the trunk identifiers to display MAC addresses for. Separate the trunk identifiers with commas. For example: 1,2-4,77
filter vlan-map <VLAN_list>	List the VLAN identifiers to display MAC addresses for. Separate the VLAN identifiers with commas. For example: 1,2-4,77
list	List the MAC address entries and the total number of entries.
switch-port-macs-db	List which MAC addresses are assigned to local ports.

## Example output

```
S524DF4K15000024 # diagnose switch mac-address filter show
```

```
flag bit pattern: 0x00000000
flag bit Mask:    0x00000000
vlan map: 0-4095
port-id map: 1,64
trunk-id map: 0-127
```

```
S524DF4K15000024 # diagnose switch mac-address list
```

```
MAC: 08:5b:0e:f1:95:e5  VLAN: 4094 Port: internal(port-id 31)
Flags: 0x00010460 [ static hit src-hit native ]
```

```
MAC: d6:dd:25:be:2c:43  VLAN: 1 Port: port1(port-id 1)
Flags: 0x00000020 [ static ]
```

```
Total Displayed: 2
```

```
S524DF4K15000024 # diagnose switch mac-address switch-port-macs-db
```

```
Total MACs : 30
```

```
MAC-1   : 08:5b:0e:f1:95:e6
MAC-2   : 08:5b:0e:f1:95:e8
MAC-3   : 08:5b:0e:f1:95:ea
MAC-4   : 08:5b:0e:f1:95:ec
MAC-5   : 08:5b:0e:f1:95:ee
MAC-6   : 08:5b:0e:f1:95:f0
MAC-7   : 08:5b:0e:f1:95:f2
MAC-8   : 08:5b:0e:f1:95:f4
MAC-9   : 08:5b:0e:f1:95:f6
MAC-10  : 08:5b:0e:f1:95:f8
MAC-11  : 08:5b:0e:f1:95:fa
MAC-12  : 08:5b:0e:f1:95:fc
MAC-13  : 08:5b:0e:f1:95:fe
MAC-14  : 08:5b:0e:f1:96:00
MAC-15  : 08:5b:0e:f1:96:02
MAC-16  : 08:5b:0e:f1:95:e7
MAC-17  : 08:5b:0e:f1:95:e9
MAC-18  : 08:5b:0e:f1:95:eb
MAC-19  : 08:5b:0e:f1:95:ed
```

```
MAC-20 : 08:5b:0e:f1:95:ef
MAC-21 : 08:5b:0e:f1:95:f1
MAC-22 : 08:5b:0e:f1:95:f3
MAC-23 : 08:5b:0e:f1:95:f5
MAC-24 : 08:5b:0e:f1:95:f7
MAC-25 : 08:5b:0e:f1:95:f9
MAC-26 : 08:5b:0e:f1:95:fb
MAC-27 : 08:5b:0e:f1:95:fd
MAC-28 : 08:5b:0e:f1:95:ff
MAC-29 : 08:5b:0e:f1:96:01
MAC-30 : 08:5b:0e:f1:96:03
```

## diagnose switch macsec statistics

Use this command to display MACsec traffic statistics for the specified port. If no port is specified, statistics for all ports are returned.

```
diagnose switch macsec statistics [<port_name>]
```

## diagnose switch macsec status

Use this command to display the MACsec status of the specified port. If no port is specified, the status for all ports is returned.

```
diagnose switch macsec status [<port_name>]
```

## diagnose switch managed-switch

Use this command to display information about the FortiSwitch unit when it is managed by a FortiGate unit:

```
diagnose switch managed-switch dump xlate-vlan
```

## diagnose switch mclag

Use these commands to manage information about MLAGs:

```
diagnose switch mclag clear-stats {all | icl | mclag <trunk_name>}
diagnose switch mclag icl
diagnose switch mclag list <trunk_name>
```

Variable	Description
clear-stats {all   icl   mclag}	Delete statistics for all MLAGs, delete MCLAG ICLs, or delete the statistics for the MCLAG with the specified trunk.

Variable	Description
icl	List all inter-chassis links (ICLs).
list <trunk_name>	Display statistics for the MCLAG with the specified trunk.

To set up an MCLAG, see [config switch trunk on page 149](#).

## Example output

```
Switch1 # diagnose switch mclag icl
ICL-trunk
    icl-ports 47-48
    egress-block-ports 3,37
    interface-mac 08:5b:0e:73:fb:e7
    local-serial-number FS1D483Z14000113
    peer-mac 08:5b:0e:73:f8:87
    peer-serial-number FS1D483Z14000097
    Local uptime 0 days 3h:57m:59s
    Peer uptime 0 days 3h:57m:16s
    MCLAG-STP-mac 08:5b:0e:73:f8:86
    keepalive interval 1
    keepalive timeout 60
    dormant candidate Peer
    split-brain Normal

Counters
    received keepalive packets 14012
    transmitted keepalive packets 14012
    received keepalive drop packets 2
```

## diagnose switch mirror auto-config

Use these commands to manage switch mirroring using ERSPAN encapsulation with automatically configured header contents:

```
diagnose switch mirror auto-config restart
diagnose switch mirror auto-config status
```

Variable	Description
restart	Restart the ERSPAN mirroring daemon.
status	Display the status of the ERSPAN mirroring.

## Example output

```
S524DF4K15000024 # diagnose switch mirror auto-config status
Session name:
Last update: never
Error msg:
```

```
State: None
Flags: 0x00000000 ()

Config:
    Last good config update: never

Route Lookup:
    Last good route update: never
    Collector IP: 0.0.0.0
    Nexthop IP: 0.0.0.0
    SVI name:
    SVI devindex: 0
    SVI source MAC: 00:00:00:00:00:00
    SVI VLAN: 0
    SVI source IP: 0.0.0.0

Nexthop ARP resolution:
    Last good ARP update: never
    Nexthop MAC: 00:00:00:00:00:00

Switching table resolution:
    Last good update: never
    L2 result: MAC: 00:00:00:00:00:00 VLAN: 0
               port-id: 0 Flags: 0x00000000
    Switch interface:
    Switch interface VLAN 0: untagged

Hardware updates:
    Last good update: never
    Last failed update: never
    Last update return: 0:Success.

Resolved/Running state:
    Last entered: never
    Last left: never
```

## diagnose switch mirror hardware status

Use this command to display information about the driver-level and hardware-level switch mirroring:

```
diagnose switch mirror hardware status
```

### Example output

```
S524DF4K15000024 # diagnose switch mirror hardware status

[flink.sniffer]=====
    Installed           : no ( inactive)
```

## diagnose switch modules

Use these commands to display information about physical layer (PHY) modules:

```
diagnose switch modules eeprom <physical_port_name>
diagnose switch modules state-machine <physical_port_name>
```

Variable	Description
eeprom	Display fragmentation and reassembly information
trap send	Generate a trap event and send it to the SNMP daemon.

### Example output

```
S524DF4K15000024 # diagnose switch modules state-machine port10
```

DMI Status

```
-----
monitor_interval    10 minutes
next_monitor_in     0:44
dmi_trace           0
alarm_trap_enabled  0
num_ports           30
mod_pres            0x0000000000000000
mod_rxlos           0x0000000000000000
state_runs          62380
state_transitions   6
```

Module Summary						Alarm - Warning Flags							
				DMI	Module	Temp	Vcc	TxBia	TxPwr	RxPwr			
port	curr state	prev state	-IC	Type	State	Hi	Lo	Hi	Lo	Hi	Lo	Hi	Lo
1	INVALID	INVALID	0-0	NONE	INVALID	...	...	...	...	...	...	...	...
2	INVALID	INVALID	0-0	NONE	INVALID	...	...	...	...	...	...	...	...
3	INVALID	INVALID	0-0	NONE	INVALID	...	...	...	...	...	...	...	...
4	INVALID	INVALID	0-0	NONE	INVALID	...	...	...	...	...	...	...	...
5	INVALID	INVALID	0-0	NONE	INVALID	...	...	...	...	...	...	...	...
6	INVALID	INVALID	0-0	NONE	INVALID	...	...	...	...	...	...	...	...
7	INVALID	INVALID	0-0	NONE	INVALID	...	...	...	...	...	...	...	...
8	INVALID	INVALID	0-0	NONE	INVALID	...	...	...	...	...	...	...	...
9	INVALID	INVALID	0-0	NONE	INVALID	...	...	...	...	...	...	...	...
10	INVALID	INVALID	0-0	NONE	INVALID	...	...	...	...	...	...	...	...
11	INVALID	INVALID	0-0	NONE	INVALID	...	...	...	...	...	...	...	...
12	INVALID	INVALID	0-0	NONE	INVALID	...	...	...	...	...	...	...	...
13	INVALID	INVALID	0-0	NONE	INVALID	...	...	...	...	...	...	...	...
14	INVALID	INVALID	0-0	NONE	INVALID	...	...	...	...	...	...	...	...
15	INVALID	INVALID	0-0	NONE	INVALID	...	...	...	...	...	...	...	...
16	INVALID	INVALID	0-0	NONE	INVALID	...	...	...	...	...	...	...	...
17	INVALID	INVALID	0-0	NONE	INVALID	...	...	...	...	...	...	...	...
18	INVALID	INVALID	0-0	NONE	INVALID	...	...	...	...	...	...	...	...
19	INVALID	INVALID	0-0	NONE	INVALID	...	...	...	...	...	...	...	...
20	INVALID	INVALID	0-0	NONE	INVALID	...	...	...	...	...	...	...	...
21	INVALID	INVALID	0-0	NONE	INVALID	...	...	...	...	...	...	...	...

```

22 | INVALID | INVALID | 0-0 | NONE | INVALID|..|..|..|..|..|..|..|..|..|..|..|..|
23 | INVALID | INVALID | 0-0 | NONE | INVALID|..|..|..|..|..|..|..|..|..|..|..|..|
24 | INVALID | INVALID | 0-0 | NONE | INVALID|..|..|..|..|..|..|..|..|..|..|..|..|
25 | EMPTY | EMPTY | 0-0 | NONE | EMPTY | ..|..|..|..|..|..|..|..|..|..|..|..|
26 | EMPTY | EMPTY | 0-0 | NONE | EMPTY | ..|..|..|..|..|..|..|..|..|..|..|..|
27 | EMPTY | EMPTY | 0-0 | NONE | EMPTY | ..|..|..|..|..|..|..|..|..|..|..|..|
28 | EMPTY | EMPTY | 0-0 | NONE | EMPTY | ..|..|..|..|..|..|..|..|..|..|..|..|
29 | EMPTY | EMPTY | 0-0 | NONE | EMPTY | ..|..|..|..|..|..|..|..|..|..|..|..|
30 | EMPTY | EMPTY | 0-0 | NONE | EMPTY | ..|..|..|..|..|..|..|..|..|..|..|..|

```

## diagnose switch mrp

Use these commands to display information about the Media Redundancy Protocol (MRP):

```

diagnose switch mrp clear
diagnose switch mrp stats
diagnose switch mrp status

```

Variable	Description
clear	Delete the MRP statistics for the manager node.
stats	Display the Manager MRP statistics for the manager node.
status	Display the current MRP status.

## diagnose switch network-monitor

Use these commands to manage information produced by network monitoring:

```

diagnose switch network-monitor cfg-stats
diagnose switch network-monitor clear-db
diagnose switch network-monitor dump-l2-db
diagnose switch network-monitor dump-l3-db
diagnose switch network-monitor dump-monitors
diagnose switch network-monitor parser-stats

```

Variable	Description
cfg-stats	Display network-monitoring configuration statistics.
clear-db	Delete all network-monitoring database entries.
dump-l2-db	List all detected devices from the layer-2 database.
dump-l3-db	List all detected devices from the layer-3 database.
dump-monitors	List the monitors used for survey-mode network monitoring.
parser-stats	List the network-monitoring parser statistics.

## Example output

```
S524DF4K15000024 # diagnose switch network-monitor cfg-stats
Network Monitor Configuration Statistics:
-----
Adds          : 1
Deletes       : 0
Free Entries  : 19

S524DF4K15000024 # diagnose switch network-monitor dump-monitors
Entry ID      Monitor Type      Monitor MAC      Packet-count
=====
1             directed-mode    00:25:00:61:64:6d    0
2             survey-mode     08:5b:0e:f1:95:e5    0
3             survey-mode     08:5b:0e:f1:95:e5    0
4             survey-mode     08:5b:0e:f1:95:e5    0
5             survey-mode     00:00:5e:00:01:05    0
6             survey-mode     08:5b:0e:f1:95:e5    0
7             survey-mode     00:21:cc:d2:76:72    0

S524DF4K15000024 # diagnose switch network-monitor parser-stats
Network Monitor Parser Statistics:
-----
Arp           : 0
Ip            : 0
Udp           : 0
Tcp           : 0
Dhcp          : 0
Eapol        : 0
Unsupported   : 0
```

## diagnose switch pdu-counters

Use these commands to manage information from switch packet PDU counters:

```
diagnose switch pdu-counters clear
diagnose switch pdu-counters list
```

Variable	Description
clear	Clear switch packet PDU counters.
list	List nonzero switch packet PDU counters.

## Example output

```
S548DN5018000377 # diagnose switch pdu-counters list
primary CPU counters:
  packet receive error : 0
Non-zero port counters:
port1:
  IGMP Membership Report : 45
```



```

        IGMP Membership Leave : 3
        IGMPv3 Membership Report : 69002
port13:
        IGMP Query packet : 50794
        IGMPv3 Membership Report : 50794
port47:
        LACP packet : 15474
        STP packet : 237919
        LLDP packet : 168194
        IGMP Query packet : 50757
        IGMP Membership Report : 29
        IGMP Membership Leave : 1
port48:
        LACP packet : 15475
        STP packet : 6
        LLDP packet : 168192
port51:
        IGMP Membership Report : 19
        IGMP Membership Leave : 4
        IGMPv3 Membership Report : 4

```

## diagnose switch physical-ports cable-diag

Use this command to display the results of a time-domain reflectometer (TDR) diagnostic test on the specified port.

```
diagnose switch physical-ports cable-diag <port_name>
```

### Example output

```

S524DF4K15000024 # diagnose switch physical-ports cable-diag port1
port1:  cable (4 pairs, length +/- 10 meters)
        pair A Open, length 0 meters
        pair B Open, length 0 meters
        pair C Open, length 0 meters
        pair D Open, length 0 meters

```

## diagnose switch physical-ports datarate

Use this command to display the number of packets received and transmitted on the specified ports as well as the data rate. Use commas to separate ports. If the ports are not specified, the statistics for all ports are displayed.

```
diagnose switch physical-ports datarate [<port_list>]
```

### Example output

```

S524DF4K15000024 # diagnose switch physical-ports datarate 1,3,4-6
Rate Display Mode: DATA_RATE
Port      | TX Packets | TX Rate      || RX Packets | RX Rate      |

```

```

-----
port1 |          0 |    0.0000 Mbps ||          0 |    0.0000 Mbps |
port3 |          0 |    0.0000 Mbps ||          0 |    0.0000 Mbps |
port4 |          0 |    0.0000 Mbps ||          0 |    0.0000 Mbps |
port5 |          0 |    0.0000 Mbps ||          0 |    0.0000 Mbps |
port6 |          0 |    0.0000 Mbps ||          0 |    0.0000 Mbps |
-----
|    0.0000 Mbps ||          |    0.0000 Mbps |

```

ctrl-c to stop

## diagnose switch physical-ports eee-status

Use this command to display whether the specified port has energy-efficient Ethernet (EEE) enabled. If the port is not specified, the status of all ports is displayed.

```
diagnose switch physical-ports eee-status [<port_name>]
```

### Example output

```
S524DF4K15000024 # diagnose switch physical-ports eee-status port9
```

```

Portname  State      RX-LPI-Status  TX-LPI-Status  TX(ms)  RX(ms)  TX-Resolved(ms)  RX-
Resolved(ms)
-----
-----
port9     Enabled    Inactive       Inactive       0        0        0
0

```

## diagnose switch physical-ports hw-counter

Use these commands to display information about counters:

```

diagnose switch physical-ports hw-counter add {rx | tx} <counter_id>
    <counter|counter|counter...>
diagnose switch physical-ports hw-counter clear {rx | tx} <counter_id>
diagnose switch physical-ports hw-counter info
diagnose switch physical-ports hw-counter remove {rx | tx} <counter_id>
    <counter|counter|counter...>
diagnose switch physical-ports hw-counter search <port_name> <interval_seconds>
    <counter|counter|counter...>
diagnose switch physical-ports hw-counter search-cancel
diagnose switch physical-ports hw-counter search-results
diagnose switch physical-ports hw-counter show {rx | tx | all} <port_name>

```

Variable	Description
hw-counter add {rx   tx} <counter_id> <counter counter counter...>	Add trigger flags to a specified counter.
hw-counter clear {rx   tx} <counter_id>	Clear a specific counter.
hw-counter info	Display the supported trigger flags (RX and TX).
hw-counter remove {rx   tx} <counter_id> <counter counter counter...>	Remove trigger flags from the specified counters.
hw-counter search <port_name> <interval_seconds> <counter counter counter...>	Retrieve the data for the specified triggers on a specified port within the interval in seconds.
hw-counter search-cancel	Cancel the currently running search.
hw-counter search-results	Display the last search results.
hw-counter show {rx   tx   all} <port_name>	Show all trigger flags and statistics on a specified port.

## Example output

```
S524DF4K15000024 # diagnose switch physical-ports hw-counter show all port9
```

Counter Statistics (port:9)			
Type	Counter ID	Value	Trigger Flags Enabled
Rx	0		RIPD4 RIPD6 RDISC RPORTD PDISC RFILDR RDROP VLANDR
Rx	1		IMBP
Rx	2		RIMDR
Tx	0		TGIP6 TGIPMC6
Tx	1		TIPD6 TIPMCD6
Tx	2		TGIPMC6
Tx	3		TPKTD
Tx	4		TGIP4 TGIP6
Tx	5		TIPMCD4 TIPMCD6
Tx	6		THIGIG2

## diagnose switch physical-ports io-stats

Use these commands to display information about input/output packet statistics:

```
diagnose switch physical-ports io-stats clear-local <port_list>
diagnose switch physical-ports io-stats cumulative
diagnose switch physical-ports io-stats list [<port_list>]
```

Variable	Description
io-stats clear-local <port_list>	Delete the statistics for input and output packets for the specified ports. Use commas to separate ports. For example: 1,3,4-6
io-stats cumulative	Display the cumulative statistics for input and output packets for all ports.
io-stats list [<port_list>]	List the statistics for input and output packets for the specified ports. If the ports are not specified, the statistics for all ports are displayed.

### Example output

```
S524DF4K15000024 # diagnose switch physical-ports io-stats cumulative
Cumulative IO Stats:
RX PacketsBpdu                69035
RX PacketsL3RxCpu              1020
RX PacketsRxAll                112157
RX PacketsFlpOrIGMP            39831
-----
```

## diagnose switch physical-ports led-flash

Use this command to flash all port LEDs on and off for a specified number of minutes so that a particular switch can be identified. Valid times are 5, 15, 30, or 60 minutes. Use `disable` to stop the LEDs from flashing.

```
diagnose switch physical-ports led-flash disable
diagnose switch physical-ports led-flash {5 | 15 | 30 | 60}
```

## diagnose switch physical-ports linerate

Use this command to display the number of packets received and transmitted on the specified ports as well as the line rate. Use commas to separate ports. If the ports are not specified, the statistics for all ports are displayed.

```
diagnose switch physical-ports linerate [<port_list>]
```

## Example output

```
S524DF4K15000024 # diagnose switch physical-ports linerate 1,3,4-6
Rate Display Mode: LINE_RATE
Port      | TX Packets | TX Rate      || RX Packets | RX Rate      |
-----|-----|-----|
port1 |          0 | 0.0000 Mbps ||          0 | 0.0000 Mbps |
port3 |          0 | 0.0000 Mbps ||          0 | 0.0000 Mbps |
port4 |          0 | 0.0000 Mbps ||          0 | 0.0000 Mbps |
port5 |          0 | 0.0000 Mbps ||          0 | 0.0000 Mbps |
port6 |          0 | 0.0000 Mbps ||          0 | 0.0000 Mbps |
-----|-----|-----|
| 0.0000 Mbps ||          0 | 0.0000 Mbps |

ctrl-c to stop
```

## diagnose switch physical-ports list

Use this command to display the details for the specified port. If the port is not specified, the details for all ports are displayed.

```
diagnose switch physical-ports list [<port_name>]
```

## Example output

```
S524DF4K15000024 # diagnose switch physical-ports list port1

Port(port1) is Admin up, line protocol is down
Interface Type is Serial Gigabit Media Independent Interface(SGMII/SerDes)
Address is 08:5B:0E:F1:95:E6, loopback is not set
MTU 9216 bytes, Encapsulation IEEE 802.3/Ethernet-II
half-duplex, 0 Mb/s, link type is auto
input  : 0 bytes, 0 packets, 0 errors, 0 drops, 0 oversizes
0 unicasts, 0 multicasts, 0 broadcasts, 0 unknowns
output : 0 bytes, 0 packets, 0 errors, 0 drops, 0 oversizes
0 unicasts, 0 multicasts, 0 broadcasts
0 fragments, 0 undersizes, 0 collisions, 0 jabbers
```

## diagnose switch physical-ports mapping

Use this command to display which drivers are associated with which ports:

```
diagnose switch physical-ports mapping
```

## Example output

```
S524DF4K15000024 # diagnose switch physical-ports mapping
Unmapped port IDs:
```

Userspace		Driver		
Port Name	PortID	Unit	Port	Driver Name
-----	-----	-----	-----	-----
port1	1	0	2	ge1
port2	2	0	1	ge0
port3	3	0	3	ge2
port4	4	0	4	ge3
port5	5	0	6	ge5
port6	6	0	5	ge4
port7	7	0	7	ge6
port8	8	0	8	ge7
port9	9	0	10	ge9
port10	10	0	9	ge8
port11	11	0	11	ge10
port12	12	0	12	ge11
port13	13	0	14	ge13
port14	14	0	13	ge12
port15	15	0	15	ge14
port16	16	0	16	ge15
port17	17	0	18	ge17
port18	18	0	17	ge16
port19	19	0	19	ge18
port20	20	0	20	ge19
port21	21	0	22	ge21
port22	22	0	21	ge20
port23	23	0	23	ge22
port24	24	0	24	ge23
port25	25	0	42	xe0
port26	26	0	43	xe1
port27	27	0	44	xe2
port28	28	0	45	xe3
port29	29	0	46	xe4
port30	30	0	50	xe8
internal	31	0	0	cpu0

## diagnose switch physical-ports mdix-status

Use this command to display whether a specified port is a medium-dependent interface crossover (MDIX) port:

```
diagnose switch physical-ports mdix-status <port_name>
```

### Example output

```
S524DF4K15000024 # diagnose switch physical-ports mdix-status port1
port1: MDIX(Crossover)
```

## diagnose switch physical-ports port-stats

Use these commands to list port statistics for the specified ports or list port statistics that are not zero. Use commas to separate ports. If the ports are not specified, the statistics for all ports are displayed.

```
diagnose switch physical-ports port-stats [<port_list> | non-zero]
```

### Example output

```
S524DF4K15000024 # diagnose switch physical-ports port-stats 1
```

```
port1 Port Stats:
```

Rx Bytes:	0
Rx Packets:	0
Rx Unicasts:	0
Rx NUnicasts:	0
Rx Multicasts:	0
Rx Broadcasts:	0
Rx Discards:	0
Rx Errors:	0
Rx Oversize:	0
Rx Pauses:	0
Rx IPMC Dropped:	0
Rx 64 Octets Packets:	0
Rx 65-127 Octets Packets:	0
Rx 128-255 Octets Packets:	0
Rx 256-511 Octets Packets:	0
Rx 512-1023 Octets Packets:	0
Rx 1024-1518 Octets Packets:	0
Rx 1519-2047 Octets Packets:	0
Rx 2048-4095 Octets Packets:	0
Rx 4096-9216 Octets Packets:	0
Rx 9217-16383 Octets Packets:	0
Rx L3 Packets:	0
Tx Bytes:	0
Tx Packets:	0
Tx Unicasts:	0
Tx NUnicasts:	0
Tx Multicasts:	0
Tx Broadcasts:	0
Tx Discards:	0
Tx Errors:	0
Tx Oversize:	0
Tx Pauses:	0
Tx IPMC Dropped:	0
Tx 64 Octets Packets:	0
Tx 65-127 Octets Packets:	0
Tx 128-255 Octets Packets:	0
Tx 256-511 Octets Packets:	0
Tx 512-1023 Octets Packets:	0
Tx 1024-1518 Octets Packets:	0
Tx 1519-2047 Octets Packets:	0

```

Tx 2048-4095 Octets Packets:      0
Tx 4096-9216 Octets Packets:      0
Tx 9217-16383 Octets Packets:     0

Fragments:                        0
Undersize:                        0
Jabbers:                          0
Collisions:                       0
CRC Alignment Errors:             0
IPMC Bridged:                     0
IPMC Routed:                      0

```

-----

## diagnose switch physical-ports qos-rates

Use these commands to display real-time egress QoS queue rates, including the data rate, line rate, and drop rate:

```

diagnose switch physical-ports qos-rates clear <port_list>
diagnose switch physical-ports qos-rates list [<port_list>]
diagnose switch physical-ports qos-rates non-zero

```

Variable	Description
qos-rates clear <port_list>	Delete the QoS statistics for the specified ports. If the ports are not specified, the statistics for all ports are deleted.
qos-rates list [<port_list>]	Display the real-time egress QoS queue rates for the specified ports. If the ports are not specified, the rates for all ports are displayed. Press <b>Ctrl+c</b> to stop the output.
qos-stats non-zero	Display only the real-time egress QoS queue rates that are not zero. Press <b>Ctrl+c</b> to stop the output.

### Example output

```
S548DF5018000776 # diagnose switch physical-ports qos-rates non-zero
```

```

-----
-----
-----

```

```

ctrl-c to
port6 QoS Rates:

```

```

queue |          PPS | data(Mbps) | line(Mbps) | drop (PPS) | drop(Mbps) |
-----
   7 |         0.0000 |         0.0000 |         0.0000 |         0.0000 |         0.0000 |
-----

```

```
port28 QoS Rates:
```



```

queue |          PPS | data(Mbps) | line(Mbps) | drop (PPS) | drop(Mbps) |
-----|-----|-----|-----|-----|-----|
  7 |      0.8466 |      0.0008 |      0.0010 |      0.0000 |      0.0000 |
-----|-----|-----|-----|-----|-----|

```

internal QoS Rates:

```

queue |          PPS | data(Mbps) | line(Mbps) | drop (PPS) | drop(Mbps) |
-----|-----|-----|-----|-----|-----|
 25 |      0.8472 |      0.0009 |      0.0010 |      0.0000 |      0.0000 |
-----|-----|-----|-----|-----|-----|

```

ctrl-c to stop  
^C

## diagnose switch physical-ports qos-stats

Use these commands to display QoS statistics:

```

diagnose switch physical-ports qos-stats clear <port_list>
diagnose switch physical-ports qos-stats list [<port_list>]
diagnose switch physical-ports qos-stats non-zero
diagnose switch physical-ports qos-stats set-qos-counter-revert [<port_list>]
diagnose switch physical-ports qos-stats set-qos-counter-zero [<port_list>]

```

Variable	Description
qos-stats clear [<port_list>]	Delete the QoS statistics for the specified ports. If the ports are not specified, the statistics for all ports are deleted.
qos-stats list [<port_list>]	Display the QoS statistics for the specified ports. If the ports are not specified, the statistics for all ports are displayed.
qos-stats non-zero	List only QoS statistics that are not zero.
qos-stats set-qos-counter-revert [<port_list> ]	Restore QoS counters to direct hardware values for the specified ports. Use commas to separate ports. If the ports are not specified, the command affects all ports.
qos-stats set-qos-counter-zero [<port_list>]	Clear QoS counters (applies to all applications except SNMP) for the specified ports. Use commas to separate ports. If the ports are not specified, the command affects all ports.

### Example output

```
S524DF4K15000024 # diagnose switch physical-ports qos-stats list 1
```

port1 QoS Stats:

```

queue |      unicast pkts |      unicast bytes |      multicast pkts |      multicast bytes
-----|-----|-----|-----|-----|
 0 |          0 |          0 |          0 |          0

```

1		0		0		0		0
2		0		0		0		0
3		0		0		0		0
4		0		0		0		0
5		0		0		0		0
6		0		0		0		0
7		0		0		0		0
-----								
queue		ucast drop pkts		ucast drop bytes		mcast drop pkts		mcast drop bytes
-----								
0		0		0		0		0
1		0		0		0		0
2		0		0		0		0
3		0		0		0		0
4		0		0		0		0
5		0		0		0		0
6		0		0		0		0
7		0		0		0		0
-----								

## diagnose switch physical-ports queue-bandwidth-setting

Use these commands to display the bandwidth setting (kbps or percentage) for the egress queues. If the ports are not specified, the bandwidth setting for all egress queues are displayed.

```
diagnose switch physical-ports queue-bandwidth-setting [<port_list>]
```

### Example output

```
S524DF4K15000024 # diagnose switch physical-ports queue-bandwidth-setting port23
```

```
port23 cosq bandwidth setting: (0: disabled)
```

port		q		KbpsMin		KbpsMax
-----+-----+-----+-----+-----+-----+-----						
port23		0		0		0
port23		1		0		0
port23		2		0		0
port23		3		0		0
port23		4		0		0
port23		5		0		0
port23		6		0		0
port23		7		0		0

## diagnose switch physical-ports set-counter-revert

Use this command to restore hardware counters (except for QoS, SNMP, and web GUI counters) on the specified ports. Use commas to separate ports. If the ports are not specified, the command affects all ports.

```
diagnose switch physical-ports set-counter-revert [<port_list>]
```

## diagnose switch physical-ports set-counter-zero

Use this command to clear all hardware counters (except for QoS, SNMP, and web GUI counters) on the specified ports. Use commas to separate ports. If the ports are not specified, the command affects all ports.

```
diagnose switch physical-ports set-counter-zero [<port_list>]
```

## diagnose switch physical-ports split-status

Use this command to display information about split ports:

```
diagnose switch physical-ports split-status
```

### Example output

```
S524DF4K15000024 # diagnose switch physical-ports split-status
Port Name      Split Phy Name      Port Index      Child Index
-----
port29         No      -                29              -
port30.1       Yes     port30           30              0
port30.2       Yes     port30           32              1
port30.3       Yes     port30           33              2
port30.4       Yes     port30           34              3
```

## diagnose switch physical-ports stats

Use these commands to display counter statistics:

```
diagnose switch physical-ports stats clear-local <port_list>
diagnose switch physical-ports stats list [<port_list>]
diagnose switch physical-ports stats non-zero
```

Variable	Description
stats clear-local <port_list>	Delete the statistics for received and transmitted packets for the specified ports for only the local session. Use commas to separate ports. For example: 1,3,4-6
stats list [<port_list>]	List the statistics for received and transmitted packets for the specified ports. Use commas to separate ports. If the ports are not specified, the statistics for all ports are displayed.
stats non-zero	List the statistics for counters that are not zero.

## Example output

```
S524DF4K15000024 # diagnose switch physical-ports stats list
```

Port	TX Packets	TX bytes	RX Packets	RX Bytes	RX L3 Packets
port1	0	0	0	0	0
port2	0	0	0	0	0
port3	0	0	0	0	0
port4	0	0	0	0	0
port5	0	0	0	0	0
port6	0	0	0	0	0
port7	0	0	0	0	0
port8	0	0	0	0	0
port9	0	0	0	0	0
port10	0	0	0	0	0
port11	0	0	0	0	0
port12	0	0	0	0	0
port13	0	0	0	0	0
port14	0	0	0	0	0
port15	0	0	0	0	0
port16	0	0	0	0	0
port17	0	0	0	0	0
port18	0	0	0	0	0
port19	0	0	0	0	0
port20	0	0	0	0	0
port21	0	0	0	0	0
port22	0	0	0	0	0
port23	0	0	0	0	0
port24	0	0	0	0	0
port25	0	0	0	0	0
port26	0	0	0	0	0
port27	0	0	0	0	0
port28	0	0	0	0	0
port29	0	0	0	0	0
port30	0	0	0	0	0
internal	393	9343000	0	0	0

## diagnose switch physical-ports summary

Use this command to display a summary about the specified physical port. If the port is not specified, summaries for all ports are displayed.

```
diagnose switch physical-ports summary [<port_name>]
```

## Example output

```
S524DF4K15000024 # diagnose switch physical-ports summary port1
```

Portname	Status	Tpid	Vlan	Duplex	Speed	Flags	Discard
port1	down	8100	1	half	-	, ,	none

```
Flags: QS(802.1Q) QE(802.1Q-in-Q,external) QI(802.1Q-in-Q,internal)
TS(static trunk) TF(forti trunk) TL(lacp trunk); MD(mirror dst)
MI(mirror ingress) ME(mirror egress) MB(mirror ingress and egress) CF (Combo Fiber), CC
(Combo Copper)
```

## diagnose switch physical-ports virtual-wire list

Use this command to list all virtual wires:

```
diagnose switch physical-ports virtual-wire list
```

### Example output

```
S524DF4K15000024 # diagnose switch physical-ports virtual-wire list
port7(7) to port8(8) TPID: 0xdee5 VLAN: 70
```

## diagnose switch poe status

Use this command to display power over Ethernet (PoE) information for a specific port:

```
diagnose switch poe status <physical_port_name>
```

Variable	Description
<physical_port_name>	Enter the port name.

### Example output

```
S524DF4K15000024 # diagnose switch poe status port1
```

```
Port(1) Power:0.00W,      Power-Status: Searching
Power-Up Mode: Normal Mode
Remote Power Device Type: PD None
Power Class: 0
Defined Max Power: 0.00W, Priority: Low.
Voltage: 54.90V
Current: 0mA
```

## diagnose switch ptp port add-link-delay

Use this command to add an estimated link delay in nanosecs to the specified poort. Adding a link delay helps with debugging, and the setting is cleared when the switch is rebooted:

```
diagnose switch ptp port add-link-delay <port_name> <estimated_link_delay>
```

## Example output

```
S548DN4K15000008 # diagnose switch ptp port add-link-delay port49 500
Adding port49's link_delay 500(ns).
```

## diagnose switch ptp port get-link-delay

Use this command to display link-delay information for the specified port:

```
diagnose switch ptp port get-link-delay <port_name>
```

## Example output

```
S548DN4K15000008 # diagnose switch ptp port get-link-delay port49
```

Portname	Speed	Link-Delay
port49	10G	500ns

## diagnose switch qnq dtag-cfg

Use this command to display information about the VLAN stacking (QinQ) configuration:

```
diagnose switch qnq dtag-cfg
```

## Example output

```
S548DF5018000776 # diagnose switch qnq dtag-cfg
```

Port Name	QinQ Mode	Add Inner-Tag	Remove Inner-Tag	Priority	Ether-Type
port39	customer	add (vid 456)	enable	follow-s-tag	0x8100

## diagnose switch trunk list

Use this command to display link aggregation information:

```
diagnose switch trunk list [<trunk_name>]
```

Variable	Description
[<trunk_name>]	Display link aggregation information for the specified trunk. If the trunk is not specified, link aggregation information for all trunks is displayed.

## Example output

```
S524DF4K15000024 # diagnose switch trunk list trunk1
```

```
Switch Trunk Information, primary-Channel
```

```
Trunk Name:  trunk1
Mode:  fortinet-trunk
Port Selection Algorithm:  N/A - Trunk Down
Trunk MAC:  08:5B:0E:F1:95:E6
```

```
Active Port  Up  Time
```

```
Non-Active Port  Status
```

```
port1          BLOCK
port2          BLOCK
```

```
S524DF4K15000024 # diagnose switch trunk list
```

```
Switch Trunk Information, primary-Channel
```

```
Trunk Name:  Mclag-icl-trunk
Mode:  lacp-active (mclag-icl)
Port Selection Algorithm:  N/A - Trunk Down
Trunk MAC:  08:5B:0E:F1:95:F4
```

```
Active Port  Up  Time
```

```
Non-Active Port  Status
```

```
port15          BLOCK
port16          BLOCK
```

```
LACP flags: (A|P) (S|F) (A|I) (I|O) (E|D) (E|D)
(A|P) - LACP mode is Active or Passive
(S|F) - LACP speed is Slow or Fast
(A|I) - Aggregatable or Individual
(I|O) - Port In sync or Out of sync
(E|D) - Frame collection is Enabled or Disabled
(E|D) - Frame distribution is Enabled or Disabled
```

```
status: down
ports: 2
LACP mode: active
LACP speed: slow
aggregator ID: 1
actor key: 0
actor MAC address: 08:5b:0e:f1:95:f4
partner key: 1
partner MAC address: 00:00:00:00:00:00
```

```

slave: port15
status: down
link failure count: 0
permanent MAC addr: 08:5b:0e:f1:95:f4
actor state: ASAIDD
partner state: PSIODD
aggregator ID: 1

slave: port16
status: down
link failure count: 0
permanent MAC addr: 08:5b:0e:f1:95:f5
actor state: ASAODD
partner state: PSIODD
aggregator ID: 2

Trunk Name:  first-mclag
Mode:  static (mclag)
Port Selection Algorithm:  N/A - Trunk Down
Trunk MAC:  08:5B:0E:F1:95:E7

Active Port  Up  Time
_____

Non-Active Port  Status
_____

port2           BLOCK

```

## diagnose switch trunk summary

Use this command to display a summary of the link aggregation information:

```
diagnose switch trunk summary [<trunk_name>]
```

Variable	Description
[<trunk_name>]	Display a summary of the link aggregation information for the specified trunk. If the trunk is not specified, a summary for all trunks is displayed.

### Example output

```
S524DF4K15000024 # diagnose switch trunk summary
```

Trunk Name	Mode	PSC	MAC	Status
Up Time				
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____



## diagnose

```
Mclag-icl-trunk      lacp-active(mclag-icl)      N/A      08:5B:0E:F1:95:F4      down(0/2)
N/A
first-mclag          static(mclag)                N/A      08:5B:0E:F1:95:E7      down(0/1)
N/A
8DN3X16000001-0      lacp-active(auto-isl)        src-dst-ip 08:5B:0E:F0:9B:90      up(1/1)
0 days,0 hours,1 mins,35 secs
```

```
S524DF4K15000024 # diagnose switch trunk summary first-mclag
```

Trunk Name Up Time	Mode	PSC	MAC	Status
first-mclag N/A	static(mclag)	N/A	08:5B:0E:F1:95:E7	down(0/1)

## diagnose switch vlan

Use these commands to display information about virtual LANs:

```
diagnose switch vlan assignment capabilities
diagnose switch vlan assignment ether-proto flush
diagnose switch vlan assignment ether-proto list [{sorted-by-protocol | sorted-by-vlan}]
diagnose switch vlan assignment ipv4 flush
diagnose switch vlan assignment ipv4 list [{sorted-by-address | sorted-by-vlan}]
diagnose switch vlan assignment ipv6 flush
diagnose switch vlan assignment ipv6 list [{sorted-by-address | sorted-by-vlan}]
diagnose switch vlan assignment mac flush
diagnose switch vlan assignment mac list [{sorted-by-mac | sorted-by-vlan}]
diagnose switch vlan info cache <VLAN_ID>
diagnose switch vlan info dump
diagnose switch vlan list [<VLAN_ID>]
```

Variable	Description
assignment capabilities	Display information about hardware capabilities for VLAN assignments.
assignment ether-proto flush	Delete all VLAN entries assigned by Ethernet frame type and protocol.
assignment ether-proto list [{sorted-by-protocol   sorted-by-vlan}]	Display VLAN assignments by Ethernet frame type and protocol. Use <code>sorted-by-protocol</code> to list VLAN entries by protocol. Use <code>sorted-by-vlan</code> to list VLAN entries by the VLAN identifier.
assignment ipv4 flush	Delete all VLAN entries assigned by IPv4 address or subnet.

Variable	Description
assignment ipv4 list [{sorted-by-address   sorted-by-vlan}]	Display VLAN assignments by IPv4 address or subnet. Use <code>sorted-by-address</code> to list VLAN entries by the mask length and IP address. Use <code>sorted-by-vlan</code> to list VLAN entries by the VLAN identifier.
assignment ipv6 flush	Delete all VLAN entries assigned by IPv6 address or subnet.
assignment ipv6 list [{sorted-by-address   sorted-by-vlan}]	Display VLAN assignments by IPv6 address or subnet. Use <code>sorted-by-address</code> to list VLAN entries by the mask length and IP address. Use <code>sorted-by-vlan</code> to list VLAN entries by the VLAN identifier.
assignment mac flush	Delete all VLAN entries assigned by MAC address.
assignment mac list [{sorted-by-mac   sorted-by-vlan}]	Display VLAN assignments by MAC address. Use <code>sorted-by-mac</code> to list VLAN entries by the MAC address. Use <code>sorted-by-vlan</code> to list VLAN entries by the VLAN identifier.
info cache <VLAN_ID>	Display information about the VLAN cache.
info dump	Display VLAN-related information.
list [<VLAN_ID>]	Display which ports are assigned to the specified VLAN identifier. If the VLAN identifier is not specified, the information for all VLAN identifiers is displayed.

## Example output

```
S524DF4K15000024 # diagnose switch vlan assignment capabilities
Assignment modes supported:
Port based assignment
IPv4 address/subnet based assignment
IPv6 address/subnet based assignment
MAC address based assignment
Ethernet Protocol based assignment
```

```
S524DF4K15000024 # diagnose switch vlan info dump
Ports:
[ port1] Force[disabled]
[ port2] Force[disabled]
[ port3] Force[disabled]
[ port4] Force[disabled]
[ port5] Force[disabled]
[ port6] Force[disabled]
[ port7] Force[disabled]
[ port8] Force[disabled]
[ port9] Force[disabled]
[ port10] Force[disabled]
[ port11] Force[disabled]
[ port12] Force[disabled]
[ port13] Force[disabled]
[ port14] Force[disabled]
[ port15] Force[disabled]
```

```
[ port16] Force[disabled]
[ port17] Force[disabled]
[ port18] Force[disabled]
[ port19] Force[disabled]
[ port20] Force[disabled]
[ port21] Force[disabled]
[ port22] Force[disabled]
[ port23] Force[disabled]
[ port24] Force[disabled]
[ port25] Force[disabled]
[ port26] Force[disabled]
[ port27] Force[disabled]
[ port28] Force[disabled]
[ port29] Force[disabled]
[ port30] Force[disabled]
[internal] Force[disabled]
```

Private-VLANs:

```
S524DF4K15000024 # diagnose switch vlan list
```

```
VlanId  Ports
```

```
1      port1 port2 port3 port4 port5 port6 port7 port8 port9
      port10 port11 port12 port13 port14 port15 port16 port17
      port18 port19 port20 port21 port22 port23 port24 port25
      port26 port27 port28 port29 port30
4094   internal
```

## diagnose switch vlan-mapping egress hardware-entry

Use the following command to check the VLAN mapping on an interface for the egress direction:

```
diagnose switch vlan-mapping egress hardware-entry
```

## diagnose switch vlan-mapping ingress hardware-entry

Use the following command to check the VLAN mapping on an interface for the ingress direction:

```
diagnose switch vlan-mapping ingress hardware-entry
```

## diagnose sys checkused

Use the following command to check which tables are using the entry:

```
diagnose sys checkused <path.object.mkey>
```

Variable	Description
<path.object.mkey>	Display which tables use this entry.

## Example output

```
S524DF4K15000024 # diagnose sys checkused switch.physical-port.name
```

```
may be used by table switch.trunk.members.member-name
may be used by table switch.mirror.dst
may be used by table switch.mirror.src-ingress.name
may be used by table switch.mirror.src-egress.name
may be used by table switch.acl.policy.ingress-interface.member-name
may be used by table switch.acl.policy.action.mirror
may be used by table switch.acl.policy.action.redirect
may be used by table switch.acl.policy.action.redirect-physical-port.member-name
may be used by table switch.acl.policy.action.egress-mask.member-name
may be used by table switch.virtual-wire.first-member
may be used by table switch.virtual-wire.second-member
may be used by table switch.auto-isl-port-group.members.member-name
may be used by table system.admin.dashboard.interface
```

## diagnose sys cpuset

Use this command to display information about which CPU set uses a specific process:

```
diagnose sys cpuset <process_ID> <CPU_set_mask>
```

Variable	Description
<process_ID> <CPU_set_mask>	Specify the process identifier and CPU set mask to find out which CPU set uses the process.

## diagnose sys dayst-info

Use this command to display information about daylight saving time:

```
diagnose sys dayst-info
```

## Example output

```
S524DF4K15000024 # diagnose sys dayst-info
The current timezone '(GMT-8:00)Pacific Time(US&Canada)'. daylight saving time starts at Sun
Mar 8 02:00:00 1970, ends at Sun Nov 1 01:00:00 1970
```

## diagnose sys fan status

Use this command to display fan information:

```
diagnose sys fan status
```

### Example output

```
S524DF4K15000024 # diagnose sys fan status
```

```
Module      Status
```

```
Fan         OK
```

```
Fan speed is set to 50.0%.
```

## diagnose sys fips error-mode

**NOTE:** This command is available only when the switch is in FIPS mode

Use this command put the switch in FIPS error mode. After entering FIPS error mode, the switch halts, and the user cannot perform any action. To exit error mode, you must turn the switch off and then on again and have access to the console.

```
diagnose sys fips error-mode
```

## diagnose sys fips kat-error

**NOTE:** This command is available only when the switch is in FIPS mode

Use this command if you want to run a Known Answer Test (KAT) in error mode. The switch will halt after restarting. To exit error mode, you must turn the switch off and then on again and have access to the console.

```
diagnose sys fips <KAT_name>
```

The tests listed in the following table are available.

KAT name	Description
AES	Advanced Encryption Standard (AES) self-test
RBG-instantiate	Random bit generator (RBG)-instantiate known answer test
RBG-reseed	RBG-reseed known answer test
RBG-generate	RBG-generate known answer test
RSA	Rivest, Shamir, and Adleman Algorithm (RSA) known answer test
SHA1-HMAC	SHA1-HMAC known answer tests

KAT name	Description
SHA256-HMAC	SHA256-HMAC known answer tests
SHA384-HMAC	SHA384-HMAC known answer tests
SHA512-HMAC	SHA512-HMAC known answer tests
DHE	DHE known answer test
ECDHE	ECDHE known answer test
Configuration	Configure file integrity test
Firmware-integrity	Firmware integrity test

## diagnose sys flash

Use these commands to manage flash memory:

```
diagnose sys flash format
diagnose sys flash list [<file>]
```

Variable	Description
format	Format the shared data partition (flash partition 2).
list [<file>]	Display statistics for a file or directory in flash memory. If no file or directory is specified, statistics for all flash memory are returned.

### Example output

```
S524DF4K15000024 # diagnose sys flash list
Partition  Image                               TotalSize (KB)  Used (KB)  Use%  Active
(*) 1      S524DF-3.6.3-FW-build0390-171020           53248        22922    43%   Yes
      4096          448    11%   Yes
2          53248          0    0%   No

Flag * : next-boot partition
Image build at Oct 20 2017 17:10:54 for b0390
```

## diagnose sys flow-export

Use these commands to manage flow-export data:

```
diagnose sys flow-export delete-flows-all
diagnose sys flow-export expire-flows-all
```

Variable	Description
delete-flows-all	Delete all flow-export data.
expire-flows-all	Expire all flow-export data.

## diagnose sys flan-cloud-mgr

Use these commands to manage the SSL tunnel for FortiLAN Cloud management:

```
diagnose sys flan-cloud-mgr close-access-socket
diagnose sys flan-cloud-mgr shutdown-ssl
```

Variable	Description
close-access-socket	Restart the SSL tunnel between a FortiSwitch unit and FortiLAN Cloud by closing the socket.
shutdown-ssl	Restart the SSL tunnel between a FortiSwitch unit and FortiLAN Cloud by sending a SSL_SHUTDOWN request.

## diagnose sys kill

Use this command to end a specified process:

```
diagnose sys kill <signal_number> <process_ID>
```

Variable	Description
<signal_number> <process_ID>	End the process with the specified signal.

To find out which processes are currently running, see [diagnose sys vlan list on page 322](#).

## diagnose sys link-monitor

Use these commands to manage the link monitor:

```
diagnose sys link-monitor interface <entry>
diagnose sys link-monitor launch <entry>
diagnose sys link-monitor status {entry | all}
```

To configure the link health monitor, see [config system link-monitor on page 207](#).

Variable	Description
interface <entry>	Display information about the specified link-monitor entry.

Variable	Description
launch <entry>	Manually launch the specified link-monitor entry.
status {entry   all}	Display information about a specified link-monitor entry or all link-monitor entries.

## diagnose sys mpstat

Use this command to display information about CPU use:

```
diagnose sys mpstat <delay> <loops>
```

Variable	Description
<delay> <loops>	Display information about the CPU use after the specified number of seconds (default is 5) and for the specified number of loops (default is 1,000,000). If the values for <delay> <loops> are not specified, there is no delay, and the output continues until a key is pressed.

### Example output

```
S524DF4K15000024 # diagnose sys mpstat
```

```
Gathering data, wait 5 sec, press any key to quit.
```

```
..0..1..2..3..4
```

```
TIME          CPU      %usr    %nice    %sys    %idle
04:02:59 PM   all      0.00    0.00    5.73    94.27
                0      0.00    0.00   10.87    89.13
                1      0.00    0.00    0.59    99.41
04:02:59 PM                0.00    0.00    0.00    0.00
```

```
TIME          CPU      %usr    %nice    %sys    %idle
04:03:04 PM   all      0.00    0.00    6.87    93.13
                0      0.00    0.00   12.75    87.25
                1      0.00    0.00    1.00    99.00
04:03:04 PM                0.00    0.00    0.00    0.00
```

## diagnose sys ntp status

Use this command to display the configuration of the Network Time Protocol (NTP) servers:

```
diagnose sys ntp status
```

To configure the NTP servers, see [config system ntp on page 212](#).



## diagnose sys pcb temp

Use this command to display the printed circuit board (PCB) temperature:

```
diagnose sys pcb temp
```

### Example output

```
S524DF4K15000024 # diagnose sys pcb temp
```

Module	Status
--------	--------

Sensor1	42.0 C
---------	--------

## diagnose sys process

Use this command to display information about a specific process:

```
diagnose sys process <process_ID>
```

Variable	Description
<process_ID>	Display information about the specified process identifier.

To find out which processes are currently running, see [diagnose sys vlan list on page 322](#).

## diagnose sys psu status

Use this command to display information about the power supply unit (PSU):

```
diagnose sys psu status
```

### Example output

```
S524DF4K15000024 # diagnose sys psu status
```

```
PSU1 is OK.
```

```
PSU2 is not present.
```

## diagnose sys top

Use this command to list the processes currently running on your FortiSwitch unit:

```
diagnose sys top <delay> <lines>
```

Variable	Description
<delay> <lines>	Enter the number of seconds to delay (the default is 5) and the maximum lines of output (the default is 20).

In the output, the codes displayed on the second output line mean the following:

- U is % of user space applications using CPU. In the example, 0U means 0% of the user space applications are using CPU.
- S is % of system processes (or kernel processes) using CPU. In the example, 0S means 0% of the system processes are using the CPU.
- I is % of idle CPU. In the example, 98I means the CPU is 98% idle.
- T is the total FortiOS system memory in Mb. In the example, 123T means there are 123 Mb of system memory.
- F is free memory in Mb. In the example, 25F means there is 25 Mb of free memory.

Each additional line of the command output displays the following information for each of the processes running on the FortiSwitch (from left to right):

- Process name
- Process identifier
- State that the process is running in. The process state can be:
  - R for running
  - S for sleep
  - Z for zombie
  - D for disk sleep
- Amount of CPU that the process is using. CPU usage can range from 0.0 for a process that is sleeping to higher values for a process that is taking a lot of CPU time.
- Amount of memory that the process is using. Memory usage can range from 0.1 to 5.5 and higher.

## Example output

```
S524DF4K15000024 # diagnose sys top 5 5

Run Time: 3 days, 0 hours and 40 minutes
0U, 6S, 94I; 1978T, 1744F
pyfcgid      695      S      0.0      0.7
pyfcgid      791      S      0.0      0.7
pyfcgid      792      S      0.0      0.7
httpsd       696      S      0.0      0.6
cmdbsvr      611      S      0.0      0.6
```

## diagnose sys vlan list

Use these commands to display information about configured VLANs:

```
diagnose syst vlan list
```

To configure a VLAN, see [config switch vlan on page 153](#).

## diagnose test application

Use these commands to test specific daemons:

```
diagnose test application dnsproxy <test_level>
diagnose test application fpmdd <test_level>
diagnose test application radiusd <test_level>
diagnose test application sflowd <test_level>
diagnose test application snmpd <test_level>
```

Variable	Description
dnsproxy <test_level>	Specify the test level for the DNS proxy daemon: <ol style="list-style-type: none"> <li>1. Clear DNS cache.</li> <li>2. Show statistics.</li> <li>3. Dump DNS setting.</li> <li>4. Reload the fully qualified domain name (FQDN).</li> <li>5. Requery the FQDN.</li> <li>6. Dump the FQDN.</li> </ol>
fpmdd <test_level>	Specify the test level for the hardware offload daemon.
radiusd <test_level>	Specify the test level for the RADIUS daemon: <ul style="list-style-type: none"> <li>• 2: Clear the RADIUS server database.</li> <li>• 3: Show the RADIUS server database.</li> <li>• 33: Show the RADIUS server database (with start time).</li> <li>• 4: Show the RADIUS server database information.</li> <li>• 9: Check the high availability (HA) context table checksums.</li> <li>• 11: Show the HA synchronization connection status.</li> <li>• 20: Show the RADIUS server configuration cache.</li> <li>• 21: Show the RADIUS server interface configuration cache.</li> <li>• 99: Restart.</li> </ul>
sflowd <test_level>	Specify the test level for the sFlow daemon: <ul style="list-style-type: none"> <li>• 1: Show collector setting.</li> <li>• 2: Show state.</li> </ul>
snmpd <test_level>	Specify the test level for the SNMP daemon: <ul style="list-style-type: none"> <li>• 1: Display daemon process identifier.</li> <li>• 2: Display SNMP statistics.</li> <li>• 3: Clear SNMP statistics.</li> <li>• 4: Generate test trap.</li> <li>• 99: Restart daemon.</li> <li>• 101: Reset the msgAuthoritativeEngineBoots attribute to 0 and restart the daemon.</li> </ul>

### Example output

```
S524DF4K15000024 # diagnose test application dnsproxy 2
config: alloc=1
DNS_CACHE: alloc=0
```

```
DNS UDP: req=6680, res=0, fwd=26720, hits=0, alloc=0
cur=90 v6_cur=0
DNS TCP: req=0, alloc=0
```

```
S524DF4K15000024 # diagnose test application fpm 2
L3 egr obj Num: 0 Max: 8192 LastFoundEgrId: 0
Valid: 0 Gw: 0.0.0.0 IfIndex: 0 RefCount: 0 EgrObj: 0 Status: 0
```

## diagnose test authserver

Use these commands to test the authentication server:

```
diagnose test authserver cert <arguments>
diagnose test authserver ldap <server_name> <user_name> <password>
diagnose test authserver ldap-digest <arguments>
diagnose test authserver ldap-direct <arguments>
diagnose test authserver ldap-search <arguments>
diagnose test authserver local <arguments>
diagnose test authserver radius <server_name> <chap | pap | mschap | mschap2> <user_name>
    <password>
diagnose test authserver radius-direct <server_name_or_IP_address> <port_number> <secret>
diagnose test authserver tacacs+ <server_name> <user_name> <password>
diagnose test authserver tacacs+-direct <arguments>
```

Variable	Description
cert <arguments>	Test the certificate authentication.
ldap <server_name> <user_name> <password>	Test the connection to an LDAP server. For the server_name, use the name of the LDAP object, not the LDAP server name. Use credentials that you have used in the LDAP object itself.
ldap-digest <arguments>	Test the LDAP HA1 password query.
ldap-direct <arguments>	Test the connection to an LDAP server.
ldap-search <arguments>	Search for an LDAP server.
local <arguments>	Test the local user.
radius <server_name> <chap   pap   mschap   mschap2> <user_name> <password>	Test the connection to the RADIUS server.
radius-direct <server_name_or_IP_address> <port_number> <secret>	Test the connection to the RADIUS server. For the port number, enter -1 to use the default port. Otherwise, enter the port number to check.
tacacs+ <server_name> <user_name> <password>	Test the connection to the TACACS+ server.
tacacs+-direct <arguments>	Test the connection to the TACACS+ server.

## diagnose user radius coa

Use this command to display information about RADIUS authentication and RADIUS accounting:

```
diagnose user radius coa
```

To configure RADIUS authentication and RADIUS accounting, see [config user radius on page 232](#).

# execute

Use the `execute` commands perform immediate operations on the FortiSwitch unit:

- [execute 802-1x clear mac on page 328](#)
- [execute 802-1x clear interface on page 328](#)
- [execute 802-1x dacl-clr-stat on page 328](#)
- [execute 802-1x dacl-reinstall on page 329](#)
- [execute acl clear-counter on page 329](#)
- [execute acl key-compaction on page 329](#)
- [execute alias configure on page 330](#)
- [execute alias script on page 332](#)
- [execute backup config on page 332](#)
- [execute acl key-compaction on page 329](#)
- [execute backup memory on page 333](#)
- [execute batch on page 334](#)
- [execute bpdu-guard on page 335](#)
- [execute cfg reload on page 335](#)
- [execute cfg save on page 336](#)
- [execute clear switch igmp-snooping on page 337](#)
- [execute clear switch mld-snooping on page 338](#)
- [execute clear system arp table on page 338](#)
- [execute cli check-template-status on page 339](#)
- [execute cli status-msg-only on page 339](#)
- [execute date on page 339](#)
- [execute dhcp lease-clear on page 340](#)
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- [execute disconnect-admin-session on page 341](#)
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- [execute fips kat on page 342](#)
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- [execute fips tftp-test-vectors on page 343](#)
- [execute flapguard reset on page 343](#)
- [execute interface dhcpclient-renew on page 344](#)
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- [execute mac-limit-violation reset on page 349](#)
- [execute macsec clearstat interface on page 349](#)
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- [execute ping on page 350](#)
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- [execute tracert6 on page 370](#)

- [execute upload config on page 371](#)
- [execute verify image on page 371](#)

## execute 802-1x clear mac

Use this command to clear the authorized session associated with the specified MAC address:

```
execute 802-1x clear mac <MAC_address>
```

### Example

This example shows how to remove the authorized session associated with 00:21:cc:d2:76:72:

```
execute 802-1x clear mac 00:21:cc:d2:76:72
```

## execute 802-1x clear interface

Use this command to clear the authorized sessions associated with the specified interface:

```
execute 802-1x clear interface {internal | <port_name>}
```

### Example

This example shows how to remove the authorized sessions associated with port1:

```
execute 802-1x clear interface port1
```

## execute 802-1x dacl-clr-stat

Use this command to clear the dynamic access control lists (DACLS) from the specified interface. If the interface is not specified, the DACLS are cleared from all interfaces.

```
execute 802-1x dacl-clr-stat [<interface_name>]
```

### Example

This example shows how to remove DACLS from port 1:

```
execute 802-1x dacl-clr-stat port1
```



## execute 802-1x dacl-reinstall

Use this command to reinstall the DACLs on a specified interface. If the interface is not specified, the DACLs are reinstalled on all interfaces.

```
execute 802-1x dacl-reinstall [<interface_name>]
```

### Example

This example shows how to reinstall the DACLs on port 1:

```
execute 802-1x dacl-reinstall port1
```

## execute acl clear-counter

Use this command to clear the ACL counters associated with the specified policy:

```
execute acl clear-counter {all | ingress | egress | prelookup}
```

Variable	Description
all	Delete the ACL counters for all policies.
ingress	Delete the ACL counters for ingress policies.
egress	Delete the ACL counters for egress policies.
prelookup	Delete the ACL counters for lookup policies.

### Example

This example deletes all ACL counters:

```
execute acl clear-counter all
```

## execute acl key-compaction

**NOTE:** This command currently only works on the ingress policy.

Use the following command to clear the unused classifiers on ASIC hardware associated with ingress, egress, prelookup, or all policies for a particular group:

```
execute acl key-compaction {all | ingress | egress | prelookup} <group_ID>
```

Variable	Description
all	Delete all unused classifiers for the specified group.

Variable	Description
ingress	Delete the unused classifiers for ingress policies for the specified group.
egress	Delete the unused classifiers for egress policies for the specified group.
prelookup	Delete the unused classifiers for lookup policies for the specified group.
<group_ID>	Enter the group identifier. Group identifiers are defined in the <code>config switch acl ingress</code> command.

## Example

This example deletes all unused classifiers from group 5:

```
execute acl key-compaction all 5
```

## execute alias configure

Use the `execute alias configure` commands to execute different actions with an alias. The alias is created with the `config system alias` command with the `type` set to configuration.

## Syntax

```
execute alias configure get <alias_name> <table-entry-id-if-needed>
execute alias configure set <alias_name> <table-entry-id-if-needed> <attribute-value>
execute alias configure show <alias_name> <table-entry-id-if-needed>
execute alias configure show-full-configuration <alias_name> <table-entry-id-if-needed>
execute alias configure unset <alias_name> <table-entry-id-if-needed>
```

Variable	Description
get <alias_name> <table-entry-id-if-needed>	Display the current settings.
set <alias_name> <table-entry-id-if-needed> <attribute-value>	Change the attribute to the specified value.
show <alias_name> <table-entry-id-if-needed>	Display an abbreviated version of the current configuration.
show-full-configuration <alias_name> <table-entry-id-if-needed>	Display the full current configuration.
unset <alias_name> <table-entry-id-if-needed>	Reset the attribute to its default value.

## Examples

The following example runs the `port-status` alias, which displays only the name and status of the specified port (port1 in this example).

```
S548DF5018000776 # execute alias configure get port-status port1
name                : port1
description         : (null)
status              : up
```

The following example changes the value for the `port2` table entry to `up`.

```
S548DF5018000776 # execute alias configure set port-status port2 up
Command to be run:
```

```
-----
config switch physical-port
edit "port2"
set status "up"
next
end
-----
```

```
Do you want to continue? (y/n)y
```

The following example displays an abbreviated version of the current configuration for the `config switch physical-port` command.

```
S548DF5018000776 # execute alias configure show port-status port3
config switch physical-port
  edit "port3"
  next
end
```

The following example displays the full configuration for the `config switch physical-port` command.

```
S548DF5018000776 # execute alias configure show-full-configuration port-status port4
config switch physical-port
  edit "port4"
    set description ''
    set status up
  next
end
```

The following example toggles the status of port4.

```
S548DF5018000776 # execute alias configure unset port-status port4
Command to be run:
```

```
-----
config switch physical-port
edit "port4"
  unset status
next
end
```

## execute alias script

Use the `execute alias script` command to run a script that was created with the `config system alias` command with the type set to `script`.

### Syntax

```
execute alias script <script_name> <values...>
```

### Example

This example shows how to run a script named `mac-list` for VLAN 4092.

```
S524DF4K15000024 # execute alias script mac-list 4092
```

Command to be run:

```
-----
diag switch mac-address filter clear
diag switch mac-address filter vlan-map "4092"
diag switch mac-address list | grep -i mac
diag switch mac-address filter clear
-----
```

Do you want to continue? (y/n)y

MAC: 08:5b:0e:f1:95:e5 VLAN: 4092 Port: internal(port-id 31)

## execute backup config

Use the `execute backup config` commands to perform a partial backup of the FortiSwitch configuration to a flash disk, FTP server, or TFTP server.

### Syntax

```
execute backup config flash <comment>
execute backup config ftp <filename_str> <server_ipv4[:port_int] | server_fqdn[:port_int]>
    [<username_str> [<password_str>]] [<backup_password_str>]
execute backup config tftp <filename_str> <server_ipv4> [<backup_password_str>]
```

Variable	Description
<code>config flash &lt;comment&gt;</code>	Back up the system configuration to the flash disk. Optionally, include a comment.
<code>config ftp &lt;filename_str&gt; &lt;server_ipv4[:port_int]   server_fqdn[:port_int]&gt; [&lt;username_str&gt; [&lt;password_str&gt;]] [&lt;backup_password_str&gt;]</code>	Back up the system configuration to an FTP server. Optionally, you can specify a password to protect the saved data.

Variable	Description
config tftp <filename_str> <server_ipv4> [<backup_password_str>]	Back up the system configuration to a file on a TFTP server. Optionally, you can specify a password to protect the saved data.

## Example

This example shows how to perform a partial backup of the FortiSwitch configuration to a file named `fgt.cfg` on a TFTP server at IP address 192.168.1.23.

```
execute backup config tftp fgt.cfg 192.168.1.23
```

## execute backup full-config

Use the `execute backup full-config` commands to back up the full FortiSwitch configuration to a TFTP or FTP server.

## Syntax

```
execute backup full-config ftp <filename_str> <server_ipv4[:port_int] | server_fqdn[:port_int]> [<username_str> [<password_str>]] [<backup_password_str>]
execute backup full-config tftp <filename_str> <server_ipv4> [<backup_password_str>]
```

Variable	Description
full-config ftp <filename_str> <server_ipv4[:port_int]   server_fqdn[:port_int]> [<username_str> [<password_str>]] [<backup_password_str>]	Back up the full system configuration to a file on an FTP server. You can optionally specify a password to protect the saved data.
full-config tftp <filename_str> <server_ipv4> [<backup_password_str>]	Back up the full system configuration to a file on a TFTP server. You can optionally specify a password to protect the saved data.

## Example

This example shows how to back up the full FortiSwitch configuration to a file named `fgt.cfg` on a TFTP server at IP address 192.168.1.23.

```
execute backup full-config tftp fgt.cfg 192.168.1.23
```

## execute backup memory

Use the `execute backup memory` commands to back up the FortiSwitch logs to a TFTP or FTP server.

## Syntax

```
execute backup memory alllogs ftp <server_ipv4[:port_int] | server_fqdn[:port_int]>
    [<username_str> <password_str>]
execute backup memory alllogs tftp <server_ipv4>
execute backup memory log ftp <server_ipv4[:port_int] | server_fqdn[:port_int]> <username_
    str> <password_str> {app-ctrl | event | ids | im | spam | virus | voip | webfilter}
execute backup memory log tftp <server_ipv4> {app-ctrl | event | ids | im | spam | virus |
    voip | webfilter}
```

Variable	Description
memory alllogs ftp <server_ipv4[:port_int]   server_fqdn[:port_int]> [<username_str> <password_str>]	Back up either all memory or all hard disk log files for to an FTP server. The disk option is available on FortiSwitch models that log to a hard disk.
memory alllogs tftp <server_ipv4>	Back up either all memory or all hard disk log files for this FortiSwitch to a TFTP server. The disk option is available on FortiSwitch models that log to a hard disk.
memory log ftp <server_ipv4[:port_int]   server_fqdn[:port_int]> <username_str> <password_str> {app-ctrl   event   ids   im   spam   virus   voip   webfilter}	Back up the specified type of log file from either hard disk or memory to an FTP server. The disk option is available on FortiSwitch models that log to a hard disk.
memory log tftp <server_ipv4> {app-ctrl   event   ids   im   spam   virus   voip   webfilter}	Back up the specified type of log file from either hard disk or memory to an FTP server. The disk option is available on FortiSwitch models that log to a hard disk.

## Example

This example shows how to back up all FortiSwitch log files to a file named `fgt.cfg` on a TFTP server at IP address 192.168.1.23.

```
execute backup memory alllogs tftp fgt.cfg 192.168.1.23
```

## execute batch

Use the `execute batch` commands to execute a series of CLI commands.



The `execute batch` commands are controlled by the Maintenance (**mntgrp**) access control group.

## Syntax

```
execute batch [<cmd_cue>]
```

The parameter <cmd\_cue> includes the following values:

- `end` — exit session and run the batch commands
- `lastlog` — read the result of the last batch commands
- `start` — start batch mode
- `status` — batch mode status reporting if batch mode is running or stopped

## Example

### To start batch mode:

```
execute batch start
Enter batch mode...
```

### To enter commands to run in batch mode:

```
config system global
set refresh 5
end
```

### To execute the batch commands:

```
execute batch end
Exit and run batch commands...
```

## execute bpdu-guard

Use this command to reset a port that goes down after receiving a BPDU:

```
execute bpdu-guard reset {internal | port<number>}
```

## Example

This example shows how to reset port 1 after it receives a BPDU and goes down:

```
execute bpdu-guard reset port1
```

## execute cfg reload

Use this command to restore the saved configuration when the configuration change mode is `manual` or `revert`. This command has no effect if the mode is `automatic`, the default. The `set cfg-save` command in `system global` sets the configuration change mode.

When you reload the saved system configuration, the your session ends and the FortiSwitch performs a restart.

In the default configuration change mode, `automatic`, CLI commands become part of the saved system configuration when you execute them by entering either `next` or `end`.

In `manual` mode, commands take effect but do not become part of the saved configuration unless you execute the `execute cfg save` command. When the system restarts, the saved configuration is loaded. Configuration changes that were not saved are lost.

The `revert` mode is similar to `manual` mode, except that configuration changes are saved automatically if the administrative session is idle for more than a specified timeout period. This provides a way to recover from an erroneous configuration change, such as changing the IP address of the interface you are using for administration. You set the timeout in `system global` using the `set cfg-revert-timeout` command.

## Syntax

```
execute cfg reload
```

## Example

This is sample output from the command when successful:

```
# execute cfg reload
configs reloaded. system will reboot. This is sample output from the command when not in
runtime-only configuration mode:
# execute cfg reload
no config to be reloaded.
```

## execute cfg save

Use this command to save configuration changes when the configuration change mode is `manual` or `revert`. If the mode is `automatic`, the default, all changes are added to the saved configuration as you make them and this command has no effect. The `set cfg-save` command in `system global` sets the configuration change mode.

In `manual` mode, commands take effect but do not become part of the saved configuration unless you execute the `execute cfg save` command. When the system restarts, the saved configuration is loaded. Configuration changes that were not saved are lost.

The `revert` mode is similar to `manual` mode, except that configuration changes are reverted automatically if the administrative session is idle for more than a specified timeout period. This provides a way to recover from an erroneous configuration change, such as changing the IP address of the interface you are using for administration. To change the timeout from the default of 600 seconds, go to `system global` and use the `set cfg-revert-timeout` command.

## Syntax

```
execute cfg save
```



## Example

This is sample output from the command:

```
# execute cfg save
config saved.
This is sample output when not in runtime-only configuration mode. It also occurs when in
runtime-only configuration mode and no changes have been made:
# execute cfg save
no config to be saved.
```

## execute clear switch igmp-snooping

Use these commands to clear the learned and configured IPv4 multicast groups from the FortiSwitch unit. You can combine the commands for more control.

### Syntax

```
execute clear switch igmp-snooping all
execute clear switch igmp-snooping group <multicast_IPv4_address>
execute clear switch igmp-snooping interface <interface_name>
execute clear switch igmp-snooping vlan <VLAN_ID>
```

Variable	Description
all	Clear all IGMP-snooping groups.
group <multicast_IPv4_address>	Clear the specified IGMP-snooping group.
interface <interface_name>	Clear all IGMP-snooping groups on the specified switch interface.
vlan <VLAN_ID>	Clear all IGMP-snooping groups on the specified VLAN.

### Example

The following example clears one IGMP-snooping group from one VLAN for all interfaces:

```
execute clear switch igmp-snooping group 1.2.3.4 100
```

The following example clears one IGMP-snooping group from one VLAN on one interface:

```
execute clear switch igmp-snooping group 1.2.3.4 100 port1
```

The following example clears all IGMP-snooping groups from one interface for one VLAN:

```
execute clear switch igmp-snooping interface port1 100
```

## execute clear switch mld-snooping

Use this command to clear the learned and configured IPv6 multicast groups from the FortiSwitch unit. You can combine the commands for more control.

### Syntax

```
execute clear switch mld-snooping all
execute clear switch mld-snooping group <multicast_IPv6_address>
execute clear switch mld-snooping interface <interface_name>
execute clear switch mld-snooping vlan <VLAN_ID>
```

Variable	Description
all	Clear all MLD-snooping groups.
group <multicast_IPv6_address>	Clear the specified MLD-snooping group.
interface <interface_name>	Clear all MLD-snooping groups on the specified switch interface.
vlan <VLAN_ID>	Clear all MLD-snooping groups on the specified VLAN.

### Example

The following example clears one MLD-snooping group from one VLAN for all interfaces:

```
execute clear switch mld-snooping group ff3f::1 100
```

The following example clears one MLD-snooping group from one VLAN on one interface:

```
execute clear switch mld-snooping group ff3f::1 100 port1
```

The following example clears all MLD-snooping groups from one interface for one VLAN:

```
execute clear switch mld-snooping interface port1 100
```

## execute clear system arp table

Use this command to clear all the entries in the ARP table.

### Syntax

```
execute clear system arp table
```

## execute cli check-template-status

Use this command to report the status of the secure copy protocol (SCP) script template.

### Syntax

```
execute cli check-template-status
```

## execute cli status-msg-only

Use this command to enable or disable the display of standardized CLI error output messages. If executed, this command stops other debug messages from displaying in the current CLI session.

### Syntax

```
execute cli status-msg-only {enable | disable}
```

Variable	Description	Default
status-msg-only {enable   disable}	Enable or disable standardized CLI error output messages. Entering the command without enable or disable disables displaying standardized output.	enable

## execute date

Use this command to display or set the system date.

### Syntax

```
execute date [<date_str>]
```

**date\_str** has the form `yyyy-mm-dd`, where:

- **yyyy** is the year. The range is: 2001 to 2037
- **mm** is the month. The range is 01 to 12
- **dd** is the day of the month. The range is 01 to 31

If you do not specify a date, the command returns the current system date. Shortened values, such as “06” instead of “2006” for the year or “1” instead of “01” for month or day, are not valid.

### Example

This example sets the date to 17 September 2016:

```
execute date 2016-09-17
```

## execute dhcp lease-clear

Use these commands to clear DHCP leases:

```
execute dhcp lease-clear all
execute dhcp lease-clear <xxx.xxx.xxx.xxx,yyy.yyy.yyy.yyy,...>
```

Variable	Description	Default
lease-clear all	Clear all DHCP leases.	No default
lease-clear <xxx.xxx.xxx.xxx,yyy.yyy.yyy.yyy,...>	Clear the DHCP leases for the specified IPv4 addresses. Use a comma to separate IPv4 addresses.	No default

### Example

This example shows how to clear all DHCP leases on the specified IPv4 addresses:

```
execute dhcp lease-clear 1.2.3.4,5.6.7.8
```

## execute dhcp lease-list

Use these commands to list DHCP leases:

```
execute dhcp lease-list
execute dhcp lease-list <interface>
```

Variable	Description	Default
lease-list	List all DHCP leases.	No default
lease-list <interface>	List the DHCP leases for the specified interface.	No default

### Example

This example shows how to list all DHCP leases:

```
execute dhcp lease-list
```

## execute dhcp-snooping

Use this command to remove an IP address from the DHCP-snooping client or server database on a specific VLAN:

```
execute dhcp-snooping expire-client <VLAN-ID> <xx:xx:xx:xx:xx:xx>
```

```
execute dhcp-snooping expire-server <VLAN-ID> <xx:xx:xx:xx:xx:xx>
```

Variable	Description	Default
<VLAN-ID>	Enter the VLAN identifier. The value range is 1-4095.	No default
<xx:xx:xx:xx:xx:xx>	Enter the MAC address for the IP address to remove.	No default

## Example

This example shows how to remove the IP address that corresponds to VLAN 100 and to the MAC address 01:23:45:67:89:01 from the DHCP-snooping client database:

```
execute dhcp-snooping expire-client 100 01:23:45:67:89:01
```

## execute disconnect-admin-session

Use this command to disconnect an administrator who is logged in.

### Syntax

```
execute disconnect-admin-session <index_number>
```

To determine the index of the administrator that you want to disconnect, view the list of logged-in administrators with the following command:

```
execute disconnect-admin-session ?
```

The list of logged-in administrators looks like this:

```
Connected:
INDEX  USERNAME  TYPE    FROM           TIME
0   admin    WEB     172.20.120.51  Mon Aug 14 12:57:23 2006
1   admin2   CLI     ssh(172.20.120.54) Mon Aug 14 12:57:23 2006
```

## Example

This example shows how to disconnect the logged administrator `admin2`:

```
execute disconnect-admin-session 1
```

## execute factoryreset

Use this command to reset the FortiSwitch configuration to factory default settings.

## Syntax

```
execute factoryreset
```



This procedure deletes all changes that you have made to the FortiSwitch configuration and reverts the system to its original configuration, including resetting interface addresses.

---

## execute factoryresetfull

Use this command to fully reset the FortiSwitch configuration to factory default settings.

## Syntax

```
execute factoryreset
```



This procedure removes all configurations, saved user and application data, and licenses and resets the BIOS environment to the default. Images saved to the partitions are not removed.

---

## execute fips kat

**NOTE:** This command is available only when the switch is in FIPS mode

Use this command if you want to run a Known Answer Test (KAT) to verify that a particular security algorithm works correctly. If any test fails, the switch halts.

```
execute fips kat <KAT_name>
```

The following tests are available:

KAT name	Description
AES	Advanced Encryption Standard (AES) self-test
All	All known answer tests
Configuration	Configure file integrity test
DHE	DHE known answer test
ECDHE	ECDHE known answer test
Firmware-integrity	Firmware integrity test
RBG-generate	Random bit generator (RBG)-generate known answer test

KAT name	Description
RBG-instantiate	RBG-instantiate known answer test
RBG-reseed	RBG-reseed known answer test
RSA	Rivest, Shamir, and Adleman Algorithm (RSA) known answer test
SHA1-HMAC	SHA1-HMAC known answer tests
SHA256-HMAC	SHA256-HMAC known answer tests
SHA384-HMAC	SHA384-HMAC known answer tests
SHA512-HMAC	SHA512-HMAC known answer tests

## execute fips tftp-drbg-entropy-source

Use this command to generate entropy samples for Federal Information Processing Standards (FIPS) 140-2 (Level 2) verification:

```
execute fips tftp-drbg-entropy-source <IP_address_of_the_TFTP_server> <directory_for_the_entropy_sample_files> <total_number_of_entropy_samples>
```

## execute fips tftp-test-vectors

Use this command to run a JSON test file through the switch's security algorithm for third-party verification:

```
execute fips tftp-drbg-entropy-source <IP_address_of_the_TFTP_server> <directory_of_test_files> <name_of_JSON_test_file>
```

## execute flapguard reset

Use this command to reset the specified port if flap guard was triggered on that port:

```
execute flapguard reset <port_name>
```

### Example

This example shows how to reset port 1 after flap guard was triggered on it:

```
execute flapguard reset port1
```

## execute interface dhcpclient-renew

Use this command to renew the DHCP client for the specified DHCP interface and close the CLI session. If there is no DHCP connection on the specified port, there is no output.

### Syntax

```
execute interface dhcpclient-renew <interface>
```

### Example output

This is the output for renewing the DHCP client on port 1 before the session closes:

```
# execute interface dhcpclient-renew port1
renewing dhcp lease on port1
```

## execute interface dhcp6client-renew

Use this command to renew the DHCPv6 client for the specified DHCPv6 interface and close the CLI session. If there is no DHCPv6 connection on the specified port, there is no output.

### Syntax

```
execute interface dhcp6client-renew <interface>
```

## execute interface pppoe-reconnect

Use this command to reconnect to the PPPoE service on the specified PPPoE interface and close the CLI session. If there is no PPPoE connection on the specified port, there is no output.

### Syntax

```
execute interface pppoe-reconnect <interface>
```

## execute license add

Use this command to add a new license.



## Syntax

```
execute license add <key>
```

## execute license enhanced-debugging

Use this command to get information about the enhanced debugging license or to remove it.

### Syntax

```
execute license enhanced-debugging {clear | description | get | status}
```

Variable	Description
clear	Remove the current enhanced debugging license key.
description	Get a general description of the enhanced debugging license key.
get	Retrieve the enhanced debugging license key.
status	Check whether the enhanced debugging license is active.

### Example output

```
S524DF4K15000024 # execute license enhanced-debugging description
This license will enable potentially hazardous debug, such as shells and other features.

S524DF4K15000024 # execute license enhanced-debugging status
enhanced-debugging: Active
Debug license flags: 0x01
```

## execute license status

Use this command to display the status of all installed licenses.

### Syntax

```
execute license status
```

### Example output

```
S524DF4K15000024 # execute license status
License          | Status
```

```
enhanced-debugging : Active
FS-SW-LIC-500      : Active
```

## execute log delete

Use this command to clear all traffic log entries in memory. You will be prompted to confirm the command.

### Syntax

```
execute log delete
```

## execute log delete-all

Use this command to clear all log entries in memory and current log files on hard disk. If your system has no hard disk, only log entries in system memory are cleared. You will be prompted to confirm the command.

### Syntax

```
execute log delete-all
```

## execute log display

Use this command to display log messages that you have selected with the `execute log filter` command.

### Syntax

```
execute log display
```

The console displays the first 10 log messages. To view more messages, run the command again. You can do this until you have seen all of the selected log messages. To restart viewing the list from the beginning, use the following commands:

```
execute log filter start-line 1
execute log display
```

You can restore the log filters to their default values using the following command:

```
execute log filter reset
```

## execute log filter

Use this command to select log messages for viewing or deletion. You can view one log category on one device at a time. Optionally, you can filter the messages to select only specified date ranges or severities of log messages. For traffic logs, you can filter log messages by source or destination IP address.

Commands are cumulative. If you omit a required variable, the command displays the current setting.

Use as many `execute log filter` commands as you need to define the log messages that you want to view.

```
execute log filter category <category_name>
execute log filter device {memory | faz | fds}
execute log filter dump
execute log filter field <name>
execute log filter ha-member <unitsn_str>
execute log filter max-checklines <int>
execute log filter reset
execute log filter start-line <line_number>
execute log filter view-lines <count>
```

Variable	Description	Default
category <category_name>	Enter the type of log you want to select. For SQL logging and memory logging, one of: utm, content, event, or traffic	event
device {memory   faz   fds}	Device where the logs are stored.	memory
dump	Display current filter settings.	No default
field <name>	Press Enter to view the fields that are available for the associated category. Enter the fields you want, using commas to separate multiple fields.	No default
ha-member <unitsn_str>	Select logs from the specified HA cluster member. Enter the serial number of the system.	No default
max-checklines <int>	Set maximum number lines to check. Range 100 to 1,000,000. A value of 0 disables the feature.	No default
reset	Execute this command to reset all filter settings.	No default
start-line <line_number>	Select logs starting at specified line number. The value must be 1 or higher.	1
view-lines <count>	Set lines per view. The value range is 5 to 1000.	10

## execute log-report reset

Use this command to delete all logs, archives, and user configured report templates.

## Syntax

```
execute log-report reset
```

## execute loop-guard reset

Use this command to reset a port that has been put out of service by loop-guard.

```
execute loop-guard reset <interface>
```

## Example

This example shows how to reset port 1 after loop guard was triggered on it:

```
execute loop-guard reset port1
```

## execute mac clear

Use this command to clear MAC addresses.

## Syntax

```
execute mac clear all
execute mac clear by-interface <interface>
execute mac clear by-mac-address <mac_address>
execute mac clear by-vlan <vlan_int>
execute mac clear by-vlan-and-interface <vlan_int> <interface>
execute mac clear by-vlan-and-mac-address <vlan_int> <mac_address>
```

Variable	Description
all	Clear all MAC entries.
by-interface <interface>	Clear all MAC entries on the specified interface.
by-mac-address <mac_address>	Clear all MAC entries for a specified MAC address.
by-vlan <vlan_int>	Clear all MAC entries for a specified VLAN.
by-vlan-and-interface <vlan_int> <interface>	Clear all MAC entries for a specified VLAN on a specified interface.
by-vlan-and-mac-address <vlan_int> <mac_address>	Clear all MAC entries for a specified VLAN that match the specified MAC address.

## execute mac-limit-violation reset

Use these commands to reset the learning limit violation log.

To enable or disable the learning limit violation log for a FortiSwitch unit, see [config switch global on page 97](#).

### Syntax

```
execute mac-limit-violation reset all
execute mac-limit-violation reset interface <interface_name>
execute mac-limit-violation reset vlan <VLAN_ID>
```

Variable	Description
all	Clear all learning limit violation logs.
interface <interface_name>	Clear the learning limit violation log for a specific interface.
vlan <VLAN_ID>	Clear the learning limit violation log for a specific VLAN.

### Example

This example shows how to clear the learning limit violation log for VLAN 5:

```
execute mac-limit-violation reset vlan 5
```

## execute macsec clearstat interface

Use this command to clear all MACsec statistics on a single interface.

### Syntax

```
execute macsec clearstat interface <interface_name>
```

### Example

This example shows how to clear the MACsec statistics on port 5.

```
#execute macsec clearstat interface port5
```

## execute macsec reset interface

Use this command to reset the MACsec session on a single interface.

## Syntax

```
execute macsec reset interface <interface _name>
```

## Example

This example shows how to reset the MACsec session on port 5.

```
#execute macsec reset interface port5
```

## execute ping

The `execute ping` command sends one or more ICMP echo request (ping) to test the network connection between the FortiSwitch and another network device.

## Syntax

```
execute ping <address_ipv4>
```

<address\_ipv4> is an IP address.

## Example

This example shows how to ping a host with the IP address 172.20.120.16.

```
#execute ping 172.20.120.16
```

```
PING 172.20.120.16 (172.20.120.16): 56 data bytes
64 bytes from 172.20.120.16: icmp_seq=0 ttl=128 time=0.5 ms
64 bytes from 172.20.120.16: icmp_seq=1 ttl=128 time=0.2 ms
64 bytes from 172.20.120.16: icmp_seq=2 ttl=128 time=0.2 ms
64 bytes from 172.20.120.16: icmp_seq=3 ttl=128 time=0.2 ms
64 bytes from 172.20.120.16: icmp_seq=4 ttl=128 time=0.2 ms
```

```
--- 172.20.120.16 ping statistics ---
```

```
5 packets transmitted, 5 packets received, 0% packet loss
round-trip min/avg/max = 0.2/0.2/0.5 ms
```

## execute ping-options

Use this command to set ICMP echo request (ping) options to control the way ping tests the network connection between the FortiSwitch and another network device.

## Syntax

```
execute ping-options adaptive-ping {enable | disable}
execute ping-options data-size <bytes>
execute ping-options df-bit {yes | no}
execute ping-options interface {Auto | <outgoing_interface>}
execute ping-options interval <seconds>
execute ping-options pattern <2-byte_hex>
execute ping-options repeat-count <repeats>
execute ping-options reset
execute ping-options source {auto | <source-intf_ip>}
execute ping-options timeout <seconds>
execute ping-options tos <service_type>
execute ping-options ttl <hops>
execute ping-options validate-reply {yes | no}
execute ping-options view-settings
```

Variable	Description	Default
adaptive-ping {enable   disable}	Enable or disable adaptive ping.	disable
data-size <bytes>	Specify the datagram size in bytes.	56
df-bit {yes   no}	Set df-bit to yes to prevent the ICMP packet from being fragmented. Set df-bit to no to allow the ICMP packet to be fragmented.	no
interface {Auto   <outgoing_interface>}	Specify the source interface or select auto for the source interface to be automatically assigned.	auto
interval <seconds>	Specify the number of seconds between two pings. The value must be greater than 0.	No default
pattern <2-byte_hex>	Used to fill in the optional data buffer at the end of the ICMP packet. The size of the buffer is specified using the data_size parameter. This allows you to send out packets of different sizes for testing the effect of packet size on the connection.	No default
repeat-count <repeats>	Specify how many times to repeat ping.	5
reset	Reset the ping options to their default settings.	No default
source {auto   <source-intf_ip>}	Specify the FortiSwitch interface from which to send the ping. If you specify auto, the system selects the source address and interface based on the route to the <host-name_str> or <host_ip>. Specifying the IP address of a FortiSwitch interface tests connections to different network segments from the specified interface.	auto
timeout <seconds>	Specify, in seconds, how long to wait until ping times out.	2
tos <service_type>	Set the ToS (Type of Service) field in the packet header to provide an indication of the quality of service wanted: <ul style="list-style-type: none"> <li>lowdelay — minimize delay</li> <li>throughput — maximize throughput</li> <li>reliability — maximize reliability</li> </ul>	0

Variable	Description	Default
	<ul style="list-style-type: none"> <li>lowcost — minimize cost</li> </ul>	
ttl <hops>	Specify the time to live. Time to live is the number of hops the ping packet should be allowed to make before being discarded or returned.	64
validate-reply {yes   no}	Select <code>yes</code> to validate reply data.	no
view-settings	Display the current ping option settings.	No default

## Example

Use the following command to increase the number of pings sent:

```
execute ping-options repeat-count 10
```

Use the following command to send all pings from the FortiSwitch interface with IP address 192.168.10.23:

```
execute ping-options source 192.168.10.23
```

## execute ping6

The ping6 command sends one or more ICMP echo request (ping) to test the network connection between the FortiSwitch and an IPv6-capable network device.

### Syntax

```
execute ping6 {<address_ipv6> | <host-name_str>}
```

### Example

This example shows how to ping a host with the IPv6 address 12AB:0:0:CD30:123:4567:89AB:CDEF.

```
execute ping6 12AB:0:0:CD30:123:4567:89AB:CDEF
```

## execute ping6-options

Use this command to set ICMP echo request (ping) options to control the way ping tests the network connection between the FortiSwitch and an IPv6-capable network device.

### Syntax

```
execute ping6-options data-size <bytes>
execute ping6-options interval <seconds>
```



```

execute ping6-options pattern <2-byte_hex>
execute ping6-options repeat-count <repeats>
execute ping6-options source {auto | <source-intf_ip>}
execute ping6-options timeout <seconds>
execute ping6-options tos <service_type>
execute ping6-options ttl <hops>
execute ping6-options validate-reply {yes | no}
execute ping6-options view-settings

```

Variable	Description	Default
data-size <bytes>	Specify the datagram size in bytes.	56
df-bit {yes   no}	Set <code>df-bit</code> to <code>yes</code> to prevent the ICMP packet from being fragmented. Set <code>df-bit</code> to <code>no</code> to allow the ICMP packet to be fragmented.	no
interval <seconds>	Specify the number of seconds between two pings. The value must be greater than 0.	No default
pattern <2-byte_hex>	Used to fill in the optional data buffer at the end of the ICMP packet. The size of the buffer is specified using the <code>data_size</code> parameter. This allows you to send out packets of different sizes for testing the effect of packet size on the connection.	No default
repeat-count <repeats>	Specify how many times to repeat ping.	5
source {auto   <source-intf_ip>}	Specify the FortiSwitch interface from which to send the ping. If you specify <code>auto</code> , the system selects the source address and interface based on the route to the <code>&lt;host-name_str&gt;</code> or <code>&lt;host_ip&gt;</code> . Specifying the IP address of a FortiSwitch interface tests connections to different network segments from the specified interface.	auto
timeout <seconds>	Specify, in seconds, how long to wait until ping times out.	2
tos <service_type>	Set the ToS (Type of Service) field in the packet header to provide an indication of the quality of service wanted: <ul style="list-style-type: none"> <li><code>lowdelay</code> — minimize delay</li> <li><code>throughput</code> — maximize throughput</li> <li><code>reliability</code> — maximize reliability</li> <li><code>lowcost</code> — minimize cost</li> </ul>	0
ttl <hops>	Specify the time to live. Time to live is the number of hops the ping packet should be allowed to make before being discarded or returned.	64
validate-reply {yes   no}	Select <code>yes</code> to validate reply data.	no
view-settings	Display the current ping option settings.	No default

## Example

Use the following command to validate reply data:

```
execute ping6-options validate-reply yes
```

## execute poe-reset

This command performs a PoE reset on the specified port.

### Syntax

```
execute poe-reset <port_number>
```

### Example

Use the following command to reset the PoE power on port 1:

```
execute poe-reset port1
```

## execute reboot

Use this command to restart the system.



Abruptly powering off your system may corrupt its configuration. Use the `reboot` or `shutdown` commands to ensure proper shutdown procedures are followed to prevent any loss of configuration.

---

### Syntax

```
execute reboot [comment "comment_string">]
```

[comment <"comment\_string">] enables you to optionally add a message that will appear in the hard disk log indicating the reason for the reboot. If the message is more than one word it must be enclosed in quotation marks.

### Example

This example shows the reboot command with a message included:

```
execute reboot comment "December monthly maintenance"
```

## execute restore

Use this command to restore a configuration, firmware, or IPS signature file. The following options are available:

- restore the configuration from a file
- change the FortiSwitch firmware
- restore the bios from a file

When virtual domain configuration is enabled, the content of the backup file depends on the administrator account that created it.

A backup of the system configuration from the super admin account contains the global settings and the settings for all of the VDOMs. Only the super admin account can restore the configuration from this file.

A backup file from a regular administrator account contains the global settings and the settings for the VDOM to which the administrator belongs. Only a regular administrator account can restore the configuration from this file.

## Syntax

```
execute restore bios tftp <filename_str> <server_ipv4[:port_int]>
execute restore config flash <revision>
execute restore config ftp <filename_str> <server_ipv4[:port_int] | server_fqdn[:port_int]>
    [<username_str> <password_str>] [<backup_password_str>]
execute restore config tftp <filename_str> <server_ipv4> [<backup_password_str>]
execute restore image ftp <filename_str> <server_ipv4[:port_int] | server_fqdn[:port_int]>
    [<username_str> <password_str>]
execute restore image management-station <version_int>
execute restore image tftp <filename_str> <server_ipv4>
execute restore secondary-image ftp <filename_str> <server_ipv4[:port_int] | server_fqdn
    [:port_int]> [<username_str> <password_str>]
execute restore secondary-image tftp <filename_str> <server_ipv4>
```

Variable	Description
bios tftp <filename_str> <server_ipv4[:port_int]>	Restore the BIOS. Download the restore file from a TFTP server.
config flash <revision>	Restore the specified revision of the system configuration from the flash disk.
config ftp <filename_str> <server_ipv4[:port_int]   server_fqdn[:port_int]> [<username_str> <password_str>] [<backup_password_str>]	Restore the system configuration from an FTP server. The new configuration replaces the existing configuration, including administrator accounts and passwords. If the backup file was created with a password, you must specify the password.
config tftp <filename_str> <server_ipv4> [<backup_password_str>]	Restore the system configuration from a file on a TFTP server. The new configuration replaces the existing configuration, including administrator accounts and passwords. If the backup file was created with a password, you must specify the password.
image ftp <filename_str> <server_ipv4[:port_int]   server_fqdn[:port_int]> [<username_str> <password_str>]	Download a firmware image from an FTP server to the FortiSwitch unit. The FortiSwitch unit reboots, loading the new firmware. This command is not available in multiple VDOM mode.
image management-station <version_int>	Download a firmware image from the central management station. This is available if you have configured a FortiManager unit as a central management server. This is also available if your account with FortiGuard Analysis and Management Service allows you to upload firmware images.

Variable	Description
image tftp <filename_str> <server_ipv4>	Download a firmware image from a TFTP server to the FortiSwitch unit. The FortiSwitch unit reboots, loading the new firmware.
secondary-image ftp <filename_str> <server_ipv4[:port_int]   server_fqdn[:port_int]> [<username_str> <password_str>]	Download a firmware image from an FTP server to the FortiSwitch unit. The FortiSwitch unit saves the new firmware image in the secondary image partition.
secondary-image tftp <filename_str> <server_ipv4>	Download a firmware image from a TFTP server to the FortiSwitch unit. The FortiSwitch unit saves the new firmware image in the secondary image partition.

## Example

This example shows how to upload a configuration file from a TFTP server to the FortiSwitch and restart the FortiSwitch with this configuration. The name of the configuration file on the TFTP server is `backupconfig`. The IP address of the TFTP server is 192.168.1.23.

```
execute restore config tftp backupconfig 192.168.1.23
```

## execute revision

Use this command to manage configuration and firmware image files on the local disk.

### Syntax

```
execute revision delete config <revision>
execute revision list config
execute revision show config
```

Variable	Description
delete config <revision>	Delete the specified configuration revision on the local disk.
list config	List the configuration revisions on the local disk.
show config	Display the details of the configuration revision on the local disk.

## Example

Use the following command to delete revision 1 of the configuration file on the local disk:

```
execute revision delete config 1
```

## execute router clear bgp

Use this command to clear the BGP routing configuration.

### Syntax

```
execute router clear bgp {all | as | dampening | external | ip | ipv6}
```

Variable	Description
all <arguments>	Clear all BGP peers
as <arguments>	Clear a BGP peer by AS number.
dampening {<IP_address>   <IP_address/length>}	Clear the BGP flap-dampening information.
external <arguments>	Clear all external BGP peers.
ip <A.B.C.D X:X::X:X *>	Clear a BGP peer by IPv4 or IPv6 address. Use * to clear all BGP peers.
ipv6 <A.B.C.D X:X::X:X *>	Clear a BGP peer by IPv4 or IPv6 address. Use * to clear all BGP peers.

### Example

Use the following command to delete the BGP flap-dampening information:

```
execute router clear bgp dampening 1.2.3.4
```

## execute router clear ospf

Use this command to clear the OSPF routing configuration from the specified interface.

### Syntax

```
execute router clear ospf interface <interface_name>
```

### Example

Use the following command to delete the OSPF routing configuration from the VLAN interface:

```
execute router clear ospf interface vlan20
```

## execute router tech-support

Use this command to display the specified routing configuration and troubleshooting information.

### Syntax

```
execute router tech-support {ospf | rip | bgp | isis | static}
```

### Example

Use the following command to display the BGP routing configuration and troubleshooting information:

```
execute router tech-support bgp
```

## execute set-next-reboot

Use this command to specify the flash partition for the next reboot. The system can use the boot image from either the primary or the secondary flash partition.

**NOTE:** You must disable image rotation before you can use the execute set-next-reboot command.

### Syntax

```
execute set-next-reboot <primary | secondary>
```

### Example

This example specifies that the next reboot will use the secondary flash partition:

```
execute set-next-reboot secondary  
Set next reboot partition to secondary
```

## execute shutdown

Use this command to shut down the system immediately. You will be prompted to confirm this command.



Abruptly powering off your system might corrupt its configuration. Using the reboot and shutdown options in the CLI or in the Web-based manager ensure proper shutdown procedures are followed to prevent any loss of configuration.

---

## Syntax

```
execute shutdown [comment <"comment_string">]
```

The comment field is optional. Use it to add a message that will appear in the event log message that records the shutdown. The comment message does not appear on the Alert Message console. If the message is more than one word it must be enclosed in quotation marks.

## Example

This example shows the reboot command with a message included:

```
execute shutdown comment "emergency facility shutdown"
```

An event log message similar to the following is recorded:

```
2009-09-08 11:12:31 critical admin 41986 ssh(172.20.120.11) shutdown User admin shutdown the
device from ssh(172.20.120.11). The reason is 'emergency facility shutdown'
```

# execute source-guard-violation reset

Use these commands to reset the source-guard violations.

## Syntax

```
execute source-guard-violation reset all
execute source-guard-violation reset interface <interface_name>
```

Variable	Description
all	Reset all source-guard violations.
interface <interface_name>	Reset source-guard violations for the specified switch interface.

# execute ssh

Use this command to establish an SSH session with another system.

## Syntax

```
execute ssh <destination>
```

<destination> is the destination in the form user@IPv4\_address, user@IPv6\_address, or user@DNS\_name. If the IPv6 address is a link-local address, you must specify an output interface using %.

### Examples

```
execute ssh admin@fe80::926c:acff:fe7b:e059%vlan20 // vlan20 is the output interface.
execute ssh admin@172.20.120.122
execute ssh 1002::21
execute ssh 12.345.6.78
```

To end an SSH session, type `exit`:

```
S524DF4K15000024 # exit
Connection to 172.20.120.122 closed.
S524DF4K15000024 #
```

## execute stage

Use this command to stage an image from an FTP or TFTP server.

### Syntax

```
execute stage image ftp <string> <ftp server>[:ftp port]
execute stage image tftp <string> <ip>
```

image is the image file name (including path) on the remote server.

## execute sticky-mac

Use this command to manage MAC addresses that were dynamically learned and are persistent when the status of a FortiSwitch port changes (goes down or up).

### Syntax

```
execute sticky-mac delete-unsaved {all | interface <interface_name>}
execute sticky-mac save {all | interface <interface_name>}
```

Variable	Description
delete-unsaved {all   interface <interface_name>}	Delete all persistent MAC entries (instead of saving them in the FortiSwitch configuration file) for all interfaces or for the specified interface.



Variable	Description
save {all   interface <interface_name>}	Save all persistent MAC entries in the FortiSwitch configuration file for all interfaces or for the specified interface.

## execute switch-controller clear-nac-mac-cache

Use this command to delete the FortiSwitch cache of network access control (NAC) MAC addresses.

### Syntax

```
execute switch-controller clear-nac-mac-cache
```

## execute switch-controller delete-nac-mac-cache

Use this command to delete a specify MAC address in the FortiSwitch NAC cache.

### Syntax

```
execute switch-controller delete-nac-mac-cache <MAC_address>
```

### Example

```
S524DF4K15000024 # execute switch-controller delete-nac-mac-cache 00:00:02:00:0d:00
```

## execute switch-controller get-conn-status

Use this command to display the status of the FortiLink connection. This command is valid only when the FortiSwitch unit is managed by a FortiGate device.

### Syntax

```
execute switch-controller get-conn-status
```

### Example

```
S524DF4K15000024 # execute switch-controller get-conn-status
```

```
Get managed-switch S524DF4K15000024 connection status:
```

```
Connection: Connected
Image Version: FG100D-v6.2-build849
Remote Address: xxx.xxx.x.x
Join Time: Wed Mar 13 08:38:57 2019
DTLS Version: DTLSv1.2
```

## execute switch-controller get-nac-mac-cache

Use this command to list the MAC addresses in the FortiSwitch NAC cache.

### Syntax

```
execute switch-controller get-nac-mac-cache
```

### Example

```
S548DN5018000532 # execute switch-controller get-nac-mac-cache

MAC-ADDRESS VLAN ACT SYNC INTERFACE

00:00:02:00:0d:00 4089 1 0 port2
00:00:02:00:0d:01 4089 1 0 port2
00:00:02:00:0d:02 4089 1 0 port2
```

## execute system admin account-convert

Use this command to convert the admin password for a FortiSwitch unit from SHA256 to SHA1 encryption before downgrading from FortiSwitchOS 7.0.0 and later to an earlier FortiSwitchOS version.



If you do not convert the admin password before downgrading from FortiSwitch 7.0.0 and later, the admin password will not work after the switch reboots with the earlier FortiSwitchOS version.

---

### Syntax

```
execute system admin account-convert <admin_name>
```

### Example

```
S524DF4K15000024 # execute system admin account-convert localadmin
```

## execute system certificate ca

Use this command to import a CA certificate from a TFTP or SCEP server to the FortiSwitch or to export a CA certificate from the FortiSwitch to a TFTP server.

Before using this command, you must obtain a CA certificate issued by a Certificate Authority.

### Syntax

```
execute system certificate ca export tftp <name> <file-name> <tftp_ip>
execute system certificate ca import auto <ca_server_url> [ca_identifier_str]
execute system certificate ca import tftp <file-name> <tftp_ip>
```

Variable	Description
import	Import the CA certificate from a TFTP server to the FortiSwitch unit.
export	Export or copy the CA certificate from the FortiSwitch to a file on the TFTP server. The available CA certificates are Entrust_802.1x_CA, Entrust_802.1x_G2_CA, Entrust_802.1x_L1K_CA, Fortinet_CA, and Fortinet_CA2.
<name>	Enter the name of the CA certificate.
<file-name>	Enter the file name on the TFTP server.
<tftp_ip>	Enter the TFTP server address.
auto	Retrieve a CA certificate from a SCEP server.
tftp	Import the CA certificate to the FortiSwitch from a file on a TFTP server (local administrator PC).
<ca_server_url>	Enter the URL of the CA certificate server.
<ca_identifier_str>	CA identifier on CA certificate server (optional).

## execute system certificate crl import auto

Use this command to get a certificate revocation list via LDAP, HTTP, or SCEP protocol, depending on the `autoupdate` configuration.

To use this command, the authentication servers must already be configured.

### Syntax

```
execute system certificate crl import auto <crl-name>
```

Variable	Description
import	Import the CRL from the configured LDAP, HTTP, or SCEP authentication server to the FortiSwitch unit.
<crl-name>	Enter the name of the CRL.
auto	Trigger an auto-update of the CRL from the configured authentication server.

## execute system certificate local export tftp

Use this command to export a local certificate from the FortiSwitch to a TFTP server.

### Syntax

```
execute system certificate local export tftp <name> <file-name> <tftp_ip>
```

Variable	Description
export	Export or copy the local certificate from the FortiSwitch unit to a file on the TFTP server.
<name>	Enter the name of the local certificate. Available local certificates are Entrust_802.1x, Fortinet_Factory, and Fortinet_Firmware.
<file-name>	Enter the file name on the TFTP server.
<tftp_ip>	Enter the TFTP server address.

## execute system certificate local generate

Use this command to generate a local certificate.

When you generate a certificate request, you create a private and public key pair for the local FortiSwitch unit. The public key accompanies the certificate request. The private key remains confidential.

When you receive the signed certificate from the CA, use the `system certificate local import` command to install it on the FortiSwitch unit.

### Syntax

```
execute system certificate local generate <name> <key-length> <subject_str> <country>
<state> <city> <organization> <bu> <email> <SAN> <URL> <challenge> <source_IP> <CA_id>
<password>
```

Variable	Description
<name>	Enter the local certificate name.
<key-length>	Enter the key size, which can be 1024, 1536, or 2048.
<subject_str>	Enter the subject (host IP address/domain name/e-mail address).
<country>	Enter the country name (such as <code>canada</code> ), country code (such as <code>ca</code> ), or <code>null</code> for none.
<state>	Enter the state.
<city>	Enter the city.
<organization>	Enter the company name.
<bu>	Enter the business unit.
<email>	Enter the email address.
<SAN>	This field is optional. Enter a subject alternative name.
<URL>	This field is optional. Enter the URL of the CA server for signing using SCEP.
<challenge>	Enter the challenge password for signing using SCEP.
<source_IP>	This field is optional. Enter the source IP address for communicating with the CA server.
<CA_id>	This field is optional. Enter the CA identifier of the CA server for sign using SCEP.
<password>	This field is optional. Enter the password if you are using a private key.

## execute system certificate local import tftp

Use this command to import a local certificate to the FortiSwitch from a TFTP server.

### Syntax

```
execute system certificate local import tftp <file-name> <tftp_ip>
```

Variable	Description
<name>	Enter the name of the local certificate.
<file-name>	Enter the file name on the TFTP server.
<tftp_ip>	Enter the TFTP server address.

## execute system certificate remote

Use this command to import a remote certificate from a TFTP server or to export a remote certificate from the FortiSwitch unit to a TFTP server. The remote certificates are public certificates without a private key. They are used as OCSP (Online Certificate Status Protocol) server certificates.

### Syntax

```
execute system certificate remote import tftp <file-name> <tftp_ip>
execute system certificate remote export tftp <name> <file-name> <tftp_ip>
```

Variable	Description
import	Import the remote certificate from the TFTP server to the FortiSwitch unit.
export	Export or copy the remote certificate from the FortiSwitch to a file on the TFTP server. To view a list of the certificates, use the following command: <code>execute system certificate remote export tftp ?</code>
<name>	Enter the name of the local certificate.
<file-name>	Enter the file name on the TFTP server.
<tftp_ip>	Enter the TFTP server address.

## execute system sniffer-profile delete-capture

Use this command to delete the .pcap file for a specific packet-capture profile. To create a packet-capture profile, see [config system sniffer-profile on page 218](#).

### Syntax

```
execute system sniffer-profile delete-capture <profile_name>
```

### Example

```
execute system sniffer-profile delete-capture profile1
```

## execute system sniffer-profile pause

Use this command to pause a packet capture for a specific packet-capture profile. To create a packet-capture profile, see [config system sniffer-profile on page 218](#).

## Syntax

```
execute system sniffer-profile pause <profile_name>
```

## Example

```
execute system sniffer-profile pause profile1
```

# execute system sniffer-profile start

Use this command to start a packet capture for a specific packet-capture profile. To create a packet-capture profile, see [config system sniffer-profile on page 218](#).

## Syntax

```
execute system sniffer-profile start <profile-name>
```

## Example

```
execute system sniffer-profile start profile1
```

# execute system sniffer-profile stop

Use this command to stop a packet capture for a specific packet-capture profile. To create a packet-capture profile, see [config system sniffer-profile on page 218](#).

## Syntax

```
execute system sniffer-profile stop <profile-name>
```

## Examples

```
execute system sniffer-profile stop profile1
```

# execute system sniffer-profile upload

Use this command to upload the .pcap file for a specific packet-capture profile to a TFTP or FTP server. To create a packet-capture profile, see [config system sniffer-profile on page 218](#).

## Syntax

```
execute system sniffer-profile upload ftp <profile_name> <file_name> <FTP_server_IP_
address:<optional_port>>
execute system sniffer-profile upload tftp <profile_name> <file_name> <TFTP_server_IP_
address:<optional_port>>
```

Variable	Description
<profile_name>	Enter the name of the packet-capture profile.
<file_name>	Enter the name of the .pcap file and the path where it is located.
<FTP_server_IP_address:<optional_port>>	Enter the IP address of the FTP server and optionally enter the port number.
<TFTP_server_IP_address:<optional_port>>	Enter the IP address of the TFTP server and optionally enter the port number.

## Examples

```
execute system sniffer-profile upload ftp profile profile1.pcap 192.168.1.23
```

# execute telnet

Use this command to create a Telnet client. You can use this tool to test network connectivity.

## Syntax

```
execute telnet <telnet_ipv4 or telnet_ipv6>
```

<telnet\_ipv4 or telnet\_ipv6> is the IPv4 or IPv6 address to connect with. If the IPv6 address is a link-local address, you must specify an output interface using %.

Type `exit` to close the Telnet session.

## Examples

```
execute telnet fe80::926c:acff:fe7b:e059%vlan20 // vlan20 is the output interface.
execute telnet 1002::21
execute telnet 12.345.6.78
```

# execute time

Use this command to display or set the system time.



## Syntax

```
execute time [<time_str>]
```

**time\_str** has the form **hh:mm:ss**, where:

- **hh** is the hour. The range is 00 to 23.
- **mm** is the minutes. The range is 00 to 59.
- **ss** is the seconds. The range is 00 to 59.

If you do not specify a time, the command returns the current system time.

You are allowed to shorten numbers to only one digit when setting the time. For example both 01:01:01 and 1:1:1 are allowed.

## Example

This example sets the system time to 15:31:03:

```
execute time 15:31:03
```

## execute traceroute

Use this command to test the connection between the FortiSwitch and another network device, and display information about the network hops between the FortiSwitch and the device.

## Syntax

```
execute traceroute {<IPv4_address> | <host-name>} <maximum_number_of_hops> <number_of_
probes> <maximum_number_of_milliseconds>
```

Variable	Description	Default
{<IPv4_address>   <host-name>}	Enter the IPv4 address or host name to trace the route to.	
<maximum_number_of_hops>	Enter the maximum number of hops that the route can take.	32
<number_of_probes>	Enter the number of probes to use to trace the route.	3
<maximum_number_of_milliseconds>	Enter how many milliseconds a route can take before the trace route is stopped.	5 seconds

## Example

This example shows how to test the connection with <http://docs.forticare.com>. In this example, the `traceroute` command times out after the fifth hop indicating a possible problem.

```

S548DF5018000776 # execute traceroute docs.forticare.com 10 5 10
traceroute to docs.forticare.com (208.91.114.175), 10 hops max, 5 probe count, 10 timeout,
72 byte packets
 1  10.105.16.1  0.765 ms  0.415 ms  0.170 ms  0.164 ms  6.952 ms
 2  10.64.254.33  1.687 ms  0.666 ms  2.438 ms  2.048 ms  0.289 ms
 3  96.45.36.3   1.767 ms  0.630 ms  0.281 ms  0.323 ms  0.257 ms
 4  96.45.47.219 21.311 ms 21.403 ms 23.585 ms 21.232 ms 21.414 ms
 5  96.45.47.14  20.783 ms 20.730 ms 21.269 ms 20.747 ms 20.730 ms
 6  * * * * _

```

If your FortiSwitch is not connected to a working DNS server, you will not be able to connect to remote host-named locations with the `traceroute` command.

## execute tracert6

Use this command to test the connection between the FortiSwitch and another network device using the IPv6 protocol and to display information about the network hops between the FortiSwitch and the device.

### Syntax

```

tracert6 [-Fdn] [-f first_ttl] [-i interface] [-m max_ttl]
[-s src_addr] [-q nprobes] [-w waittime] [-z sendwait]
host [paddatalen]

```

Variable	Description
-F	Set the Don't Fragment bit.
-d	Enable debugging.
-n	Do not resolve numeric address to domain name.
-f <first_ttl>	Set the initial time-to-live used in the first outgoing probe packet.
-i <interface>	Select interface to use for tracert.
-m <max_ttl>	Set the max time-to-live (max number of hops) used in outgoing probe packets.
-s <src_addr>	Set the source IP address to use in outgoing probe packets.
-q <nprobes>	Set the number probes per hop.
-w <waittime>	Set the time in seconds to wait for response to a probe. Default is 5.
-z <sendwait>	Set the time in milliseconds to pause between probes.
host	Enter the IP address or FQDN to probe.
<paddatalen>	Set the packet size to use when probing.

## execute upload config

Use this command to upload system configurations to the flash disk from FTP or TFTP sources.

### Syntax

```
execute upload config ftp <filename_str> <comment> <server_ipv4[:port_int] | server_fqdn  
[:port_int]> [<username_str> [<password_str>]] [<backup_password_str>]  
execute upload config tftp <filename_str> <comment> <server_ipv4>
```

Variable	Description
<comment>	Comment string.
<filename_str>	Filename to upload.
<server_fqdn[:port_int]>	Server fully qualified domain name and optional port.
<server_ipv4[:port_int]>	Server IP address and optional port number.
<username_str>	User name required on server.
<password_str>	Password required on server.
<backup_password_str>	Password for backup file.

## execute verify image

Use this command to verify the integrity of the image in the primary or secondary (if applicable) flash partition.

### Syntax

```
execute verify image {primary | secondary}
```

### Example

```
execute verify image primary
```

```
Verifying the image in flash.....100%  
No issue found!
```

```
execute verify image secondary
```

```
Verifying the image in flash.....100%  
Bad/corrupted image found in flash!  
Command fail. Return code -1
```

# get

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## get hardware cpu

Use this command to display detailed information about the CPUs installed in your FortiSwitch unit.

### Syntax

```
get hardware cpu
```

### Example output

```
S524DF4K15000024 # get hardware cpu

Processor      : ARMv7 Processor rev 0 (v7l)
processor      : 0
BogoMIPS      : 1993.93

processor      : 1
BogoMIPS      : 1993.93

Features       : swp half thumb fastmult edsp tls
CPU implementer : 0x41
CPU architecture: 7
CPU variant    : 0x3
CPU part       : 0xc09
CPU revision   : 0

Hardware       : Broadcom iProc
```

```
Revision      : 0000
Serial        : 0000000000000000
```

## get hardware memory

Use this command to display information about FortiSwitch memory use. Information includes the total memory, memory in use, and free memory.

### Syntax

```
get hardware memory
```

### Example output

```
S524DF4K15000024 # get hardware memory
```

```
MemTotal:      2026080 kB
MemFree:       1725840 kB
Buffers:        1336 kB
Cached:        68548 kB
SwapCached:      0 kB
Active:        42724 kB
Inactive:      59596 kB
Active(anon):   32436 kB
Inactive(anon): 0 kB
Active(file):   10288 kB
Inactive(file): 59596 kB
Unevictable:    0 kB
Mlocked:        0 kB
HighTotal:     221184 kB
HighFree:      119468 kB
LowTotal:     1804896 kB
LowFree:     1606372 kB
SwapTotal:      0 kB
SwapFree:      0 kB
Dirty:         0 kB
Writeback:      0 kB
AnonPages:     32436 kB
Mapped:        14680 kB
Shmem:         0 kB
Slab:          15348 kB
SReclaimable:   3800 kB
SUnreclaim:    11548 kB
KernelStack:    776 kB
PageTables:     3556 kB
NFS_Unstable:   0 kB
Bounce:         0 kB
WritebackTmp:   0 kB
CommitLimit:   1013040 kB
Committed_AS:   594696 kB
VmallocTotal:   245760 kB
```

```
VmallocUsed:      66276  kB
VmallocChunk:     163772  kB
```

## get hardware status

Report information about the FortiSwitch hardware including ASIC version, CPU type, amount of memory, flash drive size, hard disk size (if present), and USB flash size (if present). Use this information to troubleshoot, to provide to Fortinet Support, or to confirm the features that your FortiSwitch model supports.

### Syntax

```
get hardware status
```

### Example output

```
S524DF4K15000024 # get hardware status

Model name: FortiSwitch-524D-FPOE
CPU: ARMv7 Processor rev 0 (v7l)
RAM: 1978 MB
MTD Flash: 52 MB /dev/mtd
Hard disk: not available
Switch CPLD Version: V0.4
Poe Firmware Version:2.6.3
```

## get log custom-field

Use this command to get information about custom log fields that have been created. To create custom log fields, see [config log custom-field on page 19](#).

### Syntax

```
get log custom-field
```

### Example output

```
S524DF4K15000024 # get log custom-field

== [ 1 ]
id: 1
== [ 2 ]
id: 2
```

This output shows that two custom fields have been created.



## get log eventfilter

Use this command to find out which logs are enabled:

- Event logs show configuration changes and allow you to monitor the activities administrators perform.
- Router logs allow you to review all router activity. Router logs are available only on supported platforms if you have the advanced features license.
- System logs show system-level activity such as IP conflicts.
- User logs show user activity such as who is logged on and when.

To enable event logging, see [config log eventfilter on page 20](#).

### Syntax

```
get log eventfilter
```

### Example output

```
S524DF4K15000024 # get log eventfilter
```

event	: enable
router	: enable
system	: enable
user	: enable

## get log gui

Use this command to find out which device is being used to display logs in the Web-based manager.

### Syntax

```
get log gui
```

### Example output

```
S524DF4K15000024 # get log gui
```

```
log-device          : memory
```

This output shows that logs are being displayed from memory.

## get log memory

Use this command to find out the current settings for logging to system memory.

## Syntax

```
get log memory filter
get log memory global-setting
get log memory setting
```

Variable	Description
filter	Find out the severity level of log entries made in system memory. The system logs all messages at and above the selected severity level. For example, if the severity is <b>error</b> , the system logs <b>error</b> , <b>critical</b> , <b>alert</b> , and <b>emergency</b> level messages. <ul style="list-style-type: none"> <li><b>emergency</b> — The system is unusable.</li> <li><b>alert</b> — Immediate action is required.</li> <li><b>critical</b> — Functionality is affected.</li> <li><b>error</b> — An erroneous condition exists and functionality is probably affected.</li> <li><b>warning</b> — Functionality might be affected.</li> <li><b>notification</b> — Information about normal events.</li> <li><b>information</b> — General information about system operations.</li> <li><b>debug</b> — Information used for diagnosing or debugging the system.</li> </ul>
global-setting	Find out the global settings for logging to system memory: <ul style="list-style-type: none"> <li><b>full-final-warning-threshold</b> — the number of log entries saved before a final warning is sent. When all memory is filled, the system overwrites the oldest log entries.</li> <li><b>full-first-warning-threshold</b> — the number of log entries saved before receiving the first warning.</li> <li><b>full-second-warning-threshold</b> — the number of log entries saved for receiving the second warning.</li> <li><b>hourly-upload</b> — whether the log is uploaded hourly.</li> <li><b>max-size</b> — the maximum size of the memory buffer log, in bytes.</li> </ul>
setting	Find out the general settings for logging to system memory: <ul style="list-style-type: none"> <li><b>diskfull</b> — whether the oldest log entries are overwritten when the system memory is full.</li> <li><b>status</b> — whether logging to system memory is enabled.</li> </ul>

## Example output

```
S524DF4K15000024 # get log memory filter
severity           : information

S524DF4K15000024 # get log memory global-setting
full-final-warning-threshold: 95
full-first-warning-threshold: 75
full-second-warning-threshold: 90
hourly-upload       : disable
max-size           : 98304

S524DF4K15000024 # get log memory setting
diskfull           : overwrite
status             : enable
```

## get log syslogd

Use this command to get information about your system log 1 settings.

### Syntax

```
get log syslogd {filter | setting}
```

Variable	Description
filter	<p>Find out the severity level of system log 1 entries. The system logs all messages at and above the selected severity level. For example, if the severity is <code>error</code>, the system logs <code>error</code>, <code>critical</code>, <code>alert</code>, and <code>emergency</code> level messages.</p> <ul style="list-style-type: none"><li>• <code>emergency</code> — The system is unusable.</li><li>• <code>alert</code> — Immediate action is required.</li><li>• <code>critical</code> — Functionality is affected.</li><li>• <code>error</code> — An erroneous condition exists and functionality is probably affected.</li><li>• <code>warning</code> — Functionality might be affected.</li><li>• <code>notification</code> — Information about normal events.</li><li>• <code>information</code> — General information about system operations.</li><li>• <code>debug</code> — Information used for diagnosing or debugging the system.</li></ul>
setting	<p>Find out the general settings for the system log 1:</p> <ul style="list-style-type: none"><li>• <code>diskfull</code> — whether the oldest log entries are overwritten when the system memory is full.</li><li>• <code>status</code> — whether logging to system memory is enabled.</li></ul>

### Example output

```
S524DF4K15000024 # get log syslogd filter
severity           : information

S524DF4K15000024 # get log syslogd setting
status            : disable
```

## get log syslogd2

Use this command to get information about your system log 2 settings.

### Syntax

```
get log syslogd2 {filter | setting}
```

Variable	Description
filter	<p>Find out the severity level of system log 2 entries. The system logs all messages at and above the selected severity level. For example, if the severity is <code>error</code>, the system logs <code>error</code>, <code>critical</code>, <code>alert</code>, and <code>emergency</code> level messages.</p> <ul style="list-style-type: none"> <li>• <code>emergency</code> — The system is unusable.</li> <li>• <code>alert</code> — Immediate action is required.</li> <li>• <code>critical</code> — Functionality is affected.</li> <li>• <code>error</code> — An erroneous condition exists and functionality is probably affected.</li> <li>• <code>warning</code> — Functionality might be affected.</li> <li>• <code>notification</code> — Information about normal events.</li> <li>• <code>information</code> — General information about system operations.</li> <li>• <code>debug</code> — Information used for diagnosing or debugging the system.</li> </ul>
setting	<p>Find out the general settings for the system log 2:</p> <ul style="list-style-type: none"> <li>• <code>diskfull</code> — whether the oldest log entries are overwritten when the system memory is full.</li> <li>• <code>status</code> — whether logging to system memory is enabled.</li> </ul>

## Example output

```
S524DF4K15000024 # get log syslogd2 filter
severity           : information

S524DF4K15000024 # get log syslogd2 setting
status            : disable
```

## get log syslogd3

Use this command to get information about your system log 3 settings.

### Syntax

```
get log syslogd3 {filter | setting}
```

Variable	Description
filter	<p>Find out the severity level of system log 3 entries. The system logs all messages at and above the selected severity level. For example, if the severity is <code>error</code>, the system logs <code>error</code>, <code>critical</code>, <code>alert</code>, and <code>emergency</code> level messages.</p> <ul style="list-style-type: none"> <li>• <code>emergency</code> — The system is unusable.</li> <li>• <code>alert</code> — Immediate action is required.</li> <li>• <code>critical</code> — Functionality is affected.</li> <li>• <code>error</code> — An erroneous condition exists and functionality is probably affected.</li> <li>• <code>warning</code> — Functionality might be affected.</li> </ul>

Variable	Description
	<ul style="list-style-type: none"> <li><code>notification</code> — Information about normal events.</li> <li><code>information</code> — General information about system operations.</li> <li><code>debug</code> — Information used for diagnosing or debugging the system.</li> </ul>
setting	Find out the general settings for the system log 3: <ul style="list-style-type: none"> <li><code>diskfull</code> — whether the oldest log entries are overwritten when the system memory is full.</li> <li><code>status</code> — whether logging to system memory is enabled.</li> </ul>

## Example output

```
S524DF4K15000024 # get log syslogd3 filter
severity           : information

S524DF4K15000024 # get log syslogd3 setting
status            : disable
```

## get router info bfd neighbor

Use this command to find out where bidirectional forwarding detection (BFD) has been enabled. If you do not specify the BFD peer IPv4 address or interface, all BFD peers are returned.

### Syntax

```
get router info bfd neighbor [<BFD_local_IPv4_address>] [<BFD_peer_interface>]
```

### Example output

```
S524DF4K15000024 # get router info bfd neighbor

OurAddr      NeighAddr      LD/RD   State   Int
192.168.15.2  192.168.15.1   1/4     UP      vlan2000
192.168.16.2  192.168.16.1   2/2     UP      vlan2001
```

## get router info bgp

Use this command to get information about the Border Gateway Protocol (BGP) routing configuration.

### Syntax

```
get router info bgp {cidr-only | community | community-info | community-list | dampening |
  filter-list | inconsistent-as | neighbors | network | network-longer-prefixes | paths
  | prefix-list | regexp | quote-regexp | route-map | scan | summary | memory}
```

Variable	Description
cidr-only	Display routes with nonnatural netmasks.
community	Display routes matching the communities.
community-info	List all BGP community information.
community-list	Display routes matching the community list.
dampening	Display router dampening information.
filter-list	Display routes conforming to the filter list.
inconsistent-as	Display routes with inconsistent AS paths.
neighbors	Show BGP neighbors for IPv4 and IPv6.
network	Show the BGP information for the network.
network-longer-prefixes	Show the BGP information for routes and more specific routes.
paths	Display the BGP path information for IPv4 and IPv6.
prefix-list	Display routes conforming to the prefix list.
regexp	Display routes matching the AS path with regular expressions.
quote-regexp	Display routes matching the AS path with regular expressions within quotation marks.
route-map	Display routes conforming to the route map.
scan	Display the BGP scan status.
summary	Display a summary of the BGP neighbor status for IPv4 and IPv6.
memory	Display the BGP memory table.

## get router info gwdetect

Use this command to get information about the gwdetect status.

### Syntax

```
get router info gwdetect
```

## get router info isis

Use this command to get information about the Intermediate System to Intermediate System Protocol (IS-IS) routing configuration for IPv4 traffic.

## Syntax

```
get router info isis {interface | neighbor | database | route | summary | summary-table | topology}
```

Variable	Description
interface	Show the IS-IS interfaces.
neighbor	Show the IS-IS neighbor adjacencies.
database	Show the IS-IS link state database.
route	Show the IS-IS IP routing table.
summary	Show the IS-IS summary.
summary-table	Show the IS-IS IPv4 summary table.
topology	Show the IS-IS paths.

## get router info kernel

Use this command to get information about the IPv4 kernel routing table. The IPv4 kernel routing table displays information about all of the routes in the kernel.

## Syntax

```
get router info kernel <routing_type>
```

## get router info pbr

Use these commands to get information about the policy-based routing (PBR) configuration.

## Syntax

```
get router info pbr {map | nexthop-group}
```

Variable	Description
map ["<map-name> <sequence-number> <interface-name>"]	Show the specified PBR rule. If the PBR rule is not specified , all rules are returned.
nexthop-group	Show the PBR next-hop group.

## Example output

```
S524DF4K15000024 # get router info pbr map
pbr-map pbrmap1
  Seq: 1 rule: 300 Installed: 0 UniqIdx: 1 HardwareInstalled: 0 Reason: Invalid NH-group
    SRC Match: 22.1.1.0/24
    DST Match: 0.0.0.0/0
    Nexthop-Group: 12:1:1:2:(10001) Installed: 0(0)
  Seq: 2 rule: 301 Installed: 0 UniqIdx: 2 HardwareInstalled: 0 Reason: Invalid NH-group
    SRC Match: 0.0.0.0/0
    DST Match: 33.1.1.0/24
    Nexthop-Group: nhgroup1(10000) Installed: 0(0)
  Seq: 3 rule: 302 Installed: 0 UniqIdx: 4 HardwareInstalled: 0 Reason: Invalid NH-group
    SRC Match: 11.1.1.0/24
    DST Match: 0.0.0.0/0
    Nexthop-Group: 13:1:1:2:vrfv4(10002) Installed: 0(0)

S524DF4K15000024 # get router info pbr nexthop-group
Nexthop-Group: 12:1:1:2: Table: 10001 Valid: 0 Installed: 0
  Valid: 0 nexthop 12.1.1.2
Nexthop-Group: nhgroup1 Table: 10000 Valid: 0 Installed: 0
  Valid: 0 nexthop 12.1.1.4
  Valid: 0 nexthop 12.1.1.5
Nexthop-Group: 13:1:1:2:vrfv4 Table: 10002 Valid: 0 Installed: 0
  Valid: 0 nexthop 13.1.1.2 nexthop-vrf vrfv4
```

## get router info multicast

Use this command to get information about the Protocol Independent Multicast (PIM) routing configuration.

### Syntax

```
get router info multicast {config | igmp | pim | table | table-count | info}
```

Variable	Description
config	Show the multicast routing configuration.
igmp { groups   sources   interface <interface_name>   join }	Show the multicast routing IGMP information.
pim { neighbour   interface <interface_name>   assert   assert-internal   assert-metric   assert-winner-metric   join   local-membership   rpf   secondary   upstream   upstream-join-desired   upstream-rpf }	Show PIM information.
table	Show the multicast routing table.
table-count	Show the multicast route and packet count.
info	Show the IP multicast.



## Example output

```
S524DF4K15000024 # get router info multicast info
Router MLAG Role: NONE
Mroute socket descriptor: 7(default)
Mroute socket uptime: 180164:50

Zclient update socket: 11 failures=0
Zclient lookup socket: 12 failures=0

Maximum highest VifIndex: 255

Upstream Join Timer: 60 secs
Join/Prune Holdtime: 210 secs
PIM ECMP: Disable
PIM ECMP Rebalance: Disable

RPF Cache Refresh Delay:      50 msecs
RPF Cache Refresh Timer:      0 msecs
RPF Cache Refresh Requests: 0
RPF Cache Refresh Events:     0
RPF Cache Refresh Last:       --:--:--
Nexthop Lookups:              0
Nexthop Lookups Avoided:      0

Scan OIL - Last: --:--:-- Events: 0
MFC Add  - Last: --:--:-- Events: 0
MFC Del   - Last: --:--:-- Events: 0

Interface      Address                ifi Vif  PktsIn PktsOut   BytesIn   BytesOut
```

## get router info ospf

Use this command to get information about any IPv4 open shortest path first (OSPF) routing that has been configured. To set up IPv4 OSPF routing, see [config router ospf on page 54](#).

### Syntax

```
get router info ospf config
get router info ospf redist-route
get router info ospf summary
get router info ospf database {brief | self-originate | router | network | summary | asbr-
    summary| external | nssa-external | opaque-link | opaque-area | opaque-as | max-age}
get router info ospf interface [<interface_name>]
get router info ospf route
get router info ospf neighbor {<neighbor_ID> | all | detail | detail all | <interface_IP_
    address>}
get router info ospf border-routers
get router info ospf status
get router info ospf vrf <VRF_name>
```

Variable	Description
config	Display detailed information about the current OSPF configuration, including interfaces, areas, access lists, and IP addresses.
redist-route	Display information about the OSPF redistributed routes.
summary	Display summary table information.
database {brief   self-originate   router   network   summary   asbr-summary   external   nssa-external   opaque-link   opaque-area   opaque-as   max-age}	Display information about the OSPF database.
interface [<interface_name>]	Display information about the specified OSPF interface. If the interface is not specified, information about all OSPF interfaces is returned.
route	Display the OSPF routing table.
neighbor {<neighbor_ID>   all   detail   detail all   <interface_IP_address>}	Display information about OSPF neighbors.
border-routers	Display information about OSPF border routers.
status	Display the current status of the OSPF routing, including router identifier, flags, timers, and areas.
vrf <VRF_name> {rdist-route   summary   database   interface   route   neighbor   border-routers   status}	Display virtual routing and forwarding (VRF) information within OSPF.

## Example output

```
S524DF4K15000024 # get router info ospf status
```

```
OSPF Routing Process, OSPF Router ID: 1.1.1.2
Supports only single TOS (TOS0) routes
This implementation conforms to RFC2328
RFC1583Compatibility flag is disabled
OpaqueCapability flag is disabled
Initial SPF scheduling delay 5000 millisec(s)
Minimum hold time between consecutive SPF's 10000 millisec(s)
Maximum hold time between consecutive SPF's 10000 millisec(s)
Hold time multiplier is currently 1
SPF algorithm last executed 2d07h22m ago
Last SPF duration 105 usecs
SPF timer is inactive
Refresh timer 10 secs  PacketsSent: 0 PacketsRecv: 0
Number of external LSA 0. Checksum Sum 0x00000000
```

```

Number of opaque AS LSA 0. Checksum Sum 0x00000000
Number of areas attached to this router: 1
Adjacency changes are logged

Area ID: 0.0.0.4 (NSSA)
Shortcutting mode: Default, S-bit consensus: ok
Number of interfaces in this area: Total: 0, Active: 0
It is an NSSA configuration.
Elected NSSA/ABR performs type-7/type-5 LSA translation.
It is not ABR, therefore not Translator.
Number of fully adjacent neighbors in this area: 0
Area has message digest authentication
Number of full virtual adjacencies going through this area: 0
SPF algorithm executed 1 times
Default-Route Cost: 1
Number of LSA 1
Number of router LSA 1. Checksum Sum 0x0000ebf8
Number of network LSA 0. Checksum Sum 0x00000000
Number of summary LSA 0. Checksum Sum 0x00000000
Number of ASBR summary LSA 0. Checksum Sum 0x00000000
Number of NSSA LSA 0. Checksum Sum 0x00000000
Number of opaque link LSA 0. Checksum Sum 0x00000000
Number of opaque area LSA 0. Checksum Sum 0x00000000

```

## get router info rip

Use this command to get information about any Routing Information Protocol (RIP) routing that has been configured. To set up RIP routing, see [config router rip on page 70](#).

### Syntax

```
get router info rip {config | database | status}
```

Variable	Description
config	Display detailed information about the current RIP configuration, including keys in the keychain, interfaces, access lists, and IP addresses.
database	Display information about the RIP database.
status	Display the current status of the RIP routing, including filter lists, redistribution, RIP version, and interfaces.

### Example output

```

S524DF4K15000024 # get router info rip status

Routing Protocol is "rip"
Sending updates every 30 seconds with +/-50%, next due in 21 seconds
Timeout after 180 seconds, garbage collect after 120 seconds
Outgoing update filter list for all interface is not set

```

```

Incoming update filter list for all interface is not set
Default redistribution metric is 1
Redistributing: static
Default version control: send version 2, receive version 2
Interface      Send  Recv  UpdSend Key-chain
vlan35         2    2    9
vlan85         2    2    8
Routing for Networks:
170.38.65.0/24
180.1.1.0/24
0.0.0.0
Distance: (default is 120)

```

## get router info routing-table

Use these commands to get information about the IPv4 routing table.

### Syntax

```

get router info routing-table <IPv4_address_route_prefix>
get router info routing-table summary
get router info routing-table all
get router info routing-table rip
get router info routing-table ospf
get router info routing-table bgp
get router info routing-table isis
get router info routing-table static
get router info routing-table connected
get router info routing-table vrf <VRF_name>
get router info routing-table dump <A.B.C.D>

```

Variable	Description
<IPv4_address_route_prefix>	Display the routes for the specified IP address or route prefix.
summary	Display a summary of the existing routes.
all	Display all routing table entries.
rip	Display the RIP routes in the routing table.
ospf	Display the OSPF routes in the routing table.
bgp	Display the BGP routess in the routing table.
isis	Display the IS-IS routes in the routing table.
static	Display the static routes in the routing table.
connected	Display the connected routes in the routing table.
vrf <VRF_name>	Display the VRF routes in the routing table.

Variable	Description
dump <A.B.C.D>	Display the details of routing table entries that include the specified IP address or route prefix.

## Example output

```
S524DF4K15000024 # get router info routing-table summary
Route Source      Routes      FIB (vrf default)
connected         3           3
static            1           1
-----
Totals            4           4

S524DF4K15000024 # get router info routing-table all
Codes: K - kernel route, C - connected, S - static, R - RIP,
       O - OSPF, I - IS-IS, B - BGP, E - EIGRP, N - NHRP,
       T - Table, v - VNC, V - VNC-Direct, A - Babel, D - SHARP,
       F - PBR, f - OpenFabric,
       > - selected route, * - FIB route, q - queued route, r - rejected route ^ - HW install
failed

S>*  0.0.0.0/0 [5/0] via 169.254.1.1, internal, 00:36:02
C>*  10.254.252.0/23 is directly connected, rspan, 00:34:37
C>*  169.254.1.0/24 is directly connected, internal, 1d00h57m
C>*  192.168.2.0/24 is directly connected, mgmt, 01:51:05
```

## get router info vrrp

Use this command to get information about Virtual Router Redundancy Protocol (VRRP) groups for IPv4.

### Syntax

```
get router info vrrp
```

### Example output

```
S524DF4K15000024 # get router info vrrp
Interface: vlan-8, primary IP address: 10.10.10.1
UseVMAC: 1
VRID: 5
vrip: 11.1.1.100, priority: 255, state: MASTER
adv_interval: 1, preempt: 1, start_time: 3
vrmac: 00:00:5e:00:01:05
vrdst:
vrgrp: 50
```

## get router info6 bfd neighbor

Use this command to find out where bidirectional forwarding detection (BFD). If you do not specify the BFD peer IPv6 address, all BFD peers are returned.

### Syntax

```
get router info6 bfd neighbor [<X:X::X:X>]
```

## get router info6 bgp

Use this command to get information about the Border Gateway Protocol (BGP) routing configuration.

### Syntax

```
get router info6 bgp {community | community-list | dampening | filter-list | neighbors |  
    network | network-longer-prefixes | paths | prefix-list | regexp | route-map |  
    summary}
```

Variable	Description
community	Display routes matching the communities.
community-list	Display routes matching the community list.
dampening	Display router dampening information.
filter-list	Display routes conforming to the filter list.
neighbors	Show BGP neighbors.
network	Show the BGP information for the network.
network-longer-prefixes	Show the BGP information for routes and more specific routes.
paths	Display the BGP path information.
prefix-list	Display routes conforming to the prefix list.
regexp	Display routes matching the AS path with regular expressions.
route-map	Display routes conforming to the route map.
summary	Display a summary of the BGP neighbor status.

## get router info6 isis

Use this command to get information about the Intermediate System to Intermediate System Protocol (IS-IS) routing configuration for IPv6 traffic.

### Syntax

```
get router info6 isis {interface | neighbor | database | route | summary | summary-table6 | topology}
```

Variable	Description
interface	Show the IS-IS interfaces.
neighbor	Show the IS-IS neighbor adjacencies.
database	Show the IS-IS link state database.
route	Show the IS-IS IP routing table.
summary	Show the IS-IS summary.
summary-table 6	Show the IS-IS IPv6 summary table.
topology	Show the IS-IS paths.

## get router info6 kernel

Use this command to get information about the IPv6 kernel routing table. The IPv6 kernel routing table displays information about all of the routes in the kernel.

### Syntax

```
get router info6 kernel
```

### Example output

```
S524DF4K15000024 # get router info6 kernel
type=02 protocol=unspec flag=00000000 oif=1(lo) dst:::1/128 gwy::: prio=0
type=02 protocol=unspec flag=00000000 oif=1(lo) dst:fe80::/128 gwy::: prio=0
type=02 protocol=unspec flag=00000000 oif=1(lo) dst:fe80::/128 gwy::: prio=0
type=02 protocol=unspec flag=00000000 oif=1(lo) dst:fe80::/128 gwy::: prio=0
type=02 protocol=unspec flag=00000000 oif=1(lo) dst:fe80::a5b:eff:fef1:95e4/128 gwy:::
prio=0
type=02 protocol=unspec flag=00000000 oif=1(lo) dst:fe80::a5b:eff:fef1:95e5/128 gwy:::
prio=0
type=02 protocol=unspec flag=00000000 oif=1(lo) dst:fe80::a5b:eff:fef1:95e5/128 gwy:::
prio=0
type=01 protocol=kernel flag=00000000 oif=42(internal) dst:fe80::/64 prio=100
```

```

type=01 protocol=kernel flag=00000000 oif=2(mgmt) dst:fe80::/64 prio=100
type=01 protocol=kernel flag=00000000 oif=49(rspan) dst:fe80::/64 prio=100
type=01 protocol=boot flag=00000000 oif=42(internal) dst:ff00::/8 prio=100
type=01 protocol=boot flag=00000000 oif=2(mgmt) dst:ff00::/8 prio=100
type=01 protocol=boot flag=00000000 oif=49(rspan) dst:ff00::/8 prio=100
type=07 protocol=kernel flag=00000000 oif=1(lo) prio=ffffffff

```

## get router info6 ospf

Use this command to get information about any IPv6 open shortest path first (OSPF) routing that has been configured. To set up IPv6 OSPF routing, see [config router ospf6 on page 62](#).

### Syntax

```

get router info6 ospf database [{router | network | inter-prefix | inter-router | external |
    link | intra-prefix}]
get router info6 ospf interface [<interface_name>]
get router info6 ospf route [<IPv6_address>]
get router info6 ospf redistribute
get router info6 ospf border-route [detail]
get router info6 ospf neighbor {<A.B.C.D> | detail}
get router info6 ospf status

```

Variable	Description
database [{router   network   inter-prefix   inter-router   external   link   intra-prefix}]	Display information about the OSPF link state advertisement (LSA) database. Specify the router LSA, network LSA, inter-prefix LSA, inter-router LSA, external LSA, link LSA, or intra-prefix LSA database. If you do not specify which LSA database, information about all LSA databases is returned.
interface [<interface_name>]	Display information about the OSPF interface. If you do not specify the interface, information about all interfaces is returned.
route [<IPv6_address>]	Display the OSPF routing table. If you do not specify an IPv6 address, all IPv6 routes are returned.
redistribute	Display redistributing external information.
border-route [detail]	Display general or detailed information about OSPF border routers.
neighbor {<A.B.C.D>   detail}	Display information about OSPF neighbors in general or in detail or specify a neighbor ID.
status	Display the current status of the OSPF routing, including router identifier, flags, timers, and areas.



## get router info6 rip

Use this command to get information about any IPv6 Routing Information Protocol (RIP) routing that has been configured. To set up IPv6 RIP routing, see [config router ripng on page 74](#).

### Syntax

```
get router info6 rip config
get router info6 rip database
get router info6 rip status
```

Variable	Description
config	Display information about the RIP configuration.
database	Display information about the RIP routes.
status	Display the current status of the RIP routing, including timers, filter lists, and neighbors.

## get router info6 routing-table

Use these commands to get information about the IPv6 routing table. If you do not specify which IPv6 routing table, information about all IPv6 routing tables is returned.

### Syntax

```
get router info6 routing-table <IPv6_address_route_prefix>
get router info6 routing-table rip
get router info6 routing-table isis
get router info6 routing-table ospf
get router info6 routing-table bgp
get router info6 routing-table static
get router info6 routing-table connected
get router info6 routing-table vrf <VRF_name>
```

Variable	Description
<IPv6_address_route_prefix>	Display the routes for the specified IPv6 address or prefix.
rip	Display the RIP routes in the routing table.
isis	Display the ISIS routes in the routing table.
ospf	Display the OSPF routes in the routing table.
bgp	Display the BGP routes in the routing table.
static	Display the static routes in the routing table.

Variable	Description
connected	Display the connected routes in the routing table.
vrf <VRF_name>	Display the VRF routes in the routing table.

## Example output

```
S524DF4K15000024 # get router info6 routing-table
Codes: K - kernel route, C - connected, S - static, R - RIPng,
O - OSPFv3, I - IS-IS, B - BGP, N - NHRP, T - Table,
v - VNC, V - VNC-Direct, A - Babel, D - SHARP, F - PBR,
f - OpenFabric,
> - selected route, * - FIB route, q - queued route, r - rejected route ^ - HW install
failed

C * fe80::/64 is directly connected, rspan, 02:41:19
C * fe80::/64 is directly connected, mgmt, 03:56:28
C>* fe80::/64 is directly connected, internal, 1d03h03m
K>* ff00::/8 [0/256] is directly connected, rspan, 02:41:20
```

## get router info6 vrrp

Use this command to get information about Virtual Router Redundancy Protocol (VRRP) groups for IPv6.

### Syntax

```
get router info6 vrrp
```

## get switch acl

Use these commands to display the ACL settings.

### Syntax

```
get switch acl counters {all | egress | ingress | prelookup}
get switch acl egress
get switch acl ingress
get switch acl policer
get switch acl prelookup
get switch acl service custom
get switch acl settings
get switch acl usage
```

Variable	Description
counters {all   egress   ingress   prelookup}	Display information about all ACL policies, egress ACL policies, ingress ACL policies, or lookup ACL policies.
egress	Display information about the ACL policy for the egress stage.
ingress	Display information about the ACL policy for the ingress stage.
policer	List which ACL policers are available for different types of traffic.
prelookup	Display information about the ACL policy for the lookup stage.
service custom	Display a list of preconfigured service entries .
settings	Display the global ACL settings for the FortiSwitch unit.
usage	Display how much of available resources are used by ACL.

## Example output

```
S524DF4K15000024 # get switch acl policer
```

```
== [ 1 ]
```

```
id: 1    description: policer1
```

```
S524DF4K15000024 # get switch acl settings
```

```
density-mode      : disable
```

```
trunk-load-balance : enable
```

```
S524DF4K15000024 # get switch acl usage
```

Device	RULES	COUNTERS	POLICERS	STAGE
(total/free)	(total/free)	(total/free)		

0	2048 /2023	4096 /4071	4096 /4096	ingress
0	512 /511	1024 /1024	768 /768	egress
0	768 /767	0 /0	0 /0	prelookup

```
S524DF4K15000024 # get switch acl counters ingress
```

```
ingress:
```

ID	Packets	Bytes	description
0001 0		0	cnt_n_mirror13
0002 0		0	cnt_n_mirror31
0003 0		0	cnt_n_mirror41

## get switch dhcp-snooping

Use these commands to display more information about the IPv4 or IPv6 DHCP-snooping databases.

## Syntax

```
get switch dhcp-snooping allowed-sever-list
get switch dhcp-snooping client-db-details
get switch dhcp-snooping client6-db-details
get switch dhcp-snooping database-summary
get switch dhcp-snooping limit-db-details
get switch dhcp-snooping server-db-details
get switch dhcp-snooping server6-db-details
get switch dhcp-snooping status
```

Variable	Description
allowed-sever-list	Display the allowed DHCP server list.
client-db-details	Display details about the IPv4 DHCP-snooping client database.
client6-db-details	Display details about the IPv6 DHCP-snooping client database.
database-summary	List the number of VLANs with various features enabled, list trusted and untrusted ports, and report how much of the databases are used.
limit-db-details	Display details about the DHCP-snooping lease-count database.
server-db-details	Display details about the IPv4 DHCP-snooping server database.  If the dhcp-server-access-list is enabled globally and the server is configured for the dhcp-server-access-list, the svr-list column displays <code>allowed</code> for that server. If the dhcp-server-access-list is enabled globally and the server is not configured in the dhcp-server-access-list, the svr-list column displays <code>blocked</code> for that server.
server6-db-details	Display details about the IPv6 DHCP-snooping server database.  If the dhcp-server-access-list is enabled globally and the server is configured for the dhcp-server-access-list, the svr-list column displays <code>allowed</code> for that server. If the dhcp-server-access-list is enabled globally and the server is not configured in the dhcp-server-access-list, the svr-list column displays <code>blocked</code> for that server.
status	Display details about the DHCP-snooping client and server database.

## Example output

```
S548DF5018000776 # get switch dhcp-snooping allowed-server-list
```

```
      vlan      ip
      10        xxx.x.x.x
```

```
FS1D243Z14000027 # get switch dhcp-snooping client-db-details
```

```
      mac      vlan  ip  lease(sec) expiry(sec) interface hostname domainname vendor server-ip
00:01:00:00:00:01 100 xxx.x.x.xxx 86400      86398      port3
00:03:00:00:00:03 100 xxx.x.x.x 86400      86394      port5
00:03:00:00:00:04 100 xxx.x.x.x 86400      86394      port5
```

```
FS1D243Z14000027 # get switch dhcp-snooping server-db-details
```

```
mac      vlan  ip  interface status svr-list last-seen-time expiry-time OFFER/ACK/NAK/OTHER
00:11:01:00:00:01 10 xxx.x.x.x port1 trusted allowed 2018-09-11 11:21:09 2018-09-12 11:21:09 7/5/0/0
```

## get switch flapguard settings

Use this command to display the flap guard settings.

### Syntax

```
get switch flapguard settings
```

### Example output

```
S524DF4K15000024 # get switch flapguard settings
```

```
flap-duration      : 30
flap-rate          : 5
status             : disable
```

## get switch global

Use this command to get information about the global settings of your FortiSwitch unit.

### Syntax

```
get switch global
```

### Example output

```
S524DF4K15000024 # get switch global
```

```
name                : (null)
mac-aging-interval  : 150
poe-alarm-threshold : 40
poe-power-mode      : first-come-first-served
poe-guard-band      : 10
ip-mac-binding      : enable
dmi-global-all     : enable
poe-pre-standard-detect: enable
poe-power-budget    : 200
trunk-hash-mode     : enhanced
```

```
trunk-hash-unkunicast-src-dst: enable
auto-fortilink-discovery: enable
auto-isl                : enable
mclag-peer-info-timeout: 300
auto-isl-port-group : 0
max-path-in-ecmp-group: 4
virtual-wire-tpid    : 0xdee5
loop-guard-tx-interval: 15
dhcp-snooping-database-export: enable
forti-trunk-dmac      : 02:80:c2:00:00:02
port-security:
link-down-auth        : set-unauth
reauth-period         : 60
max-reauth-attempt    : 2
```

## get switch igmp-snooping

Use this command to get the IGMP-snooping settings of your FortiSwitch unit.

### Syntax

```
get switch igmp-snooping {globals | group | static-group | status}
```

Variable	Description
globals	Display the global IGMP-snooping configuration on the FortiSwitch unit.
group	Display a list of learned multicast groups.
static-group	Display the list of configured static groups.
status	Display the status of IGMP-snooping VLANs and group

### Example output

```
S524DF4K15000024 # get switch igmp-snooping globals
aging-time : 300
leave-response-timeout: 10
query-interval : 120
```

```
FS1D243Z13000023 # get switch igmp-snooping group
Number of Groups: 7
port of-port VLAN GROUP Age
(__port__9) 1 23 231.8.5.4 16
(__port__9) 1 23 231.8.5.5 16
(__port__9) 1 23 231.8.5.6 16
(__port__9) 1 23 231.8.5.7 16
(__port__9) 1 23 231.8.5.8 16
(__port__9) 1 23 231.8.5.9 16
(__port__9) 1 23 231.8.5.10 16
(__port__43) 3 23 querier 17
(__port__14) 8 --- flood-reports ---
```

```
(__port__10) 2 --- flood-traffic ---

FS1D243Z13000023 # get switch igmp-snooping static-group

VLAN ID Group-Name      Multicast-addr  Member-interface
-----
11      g239-1             239:1:1:1      port6 trunk-2
11      g239-11          239:2:2:11     port26 port48 trunk-2
40      g239-1             239:1:1:1      port5 port25 trunk-2
40      g239-2             239:2:2:2      port25 port26

S524DF4K15000048 # get switch igmp-snooping status

IGMP-SNOOPING enabled vlans:
-----
100

IGMP-Proxy enabled vlans:
-----

Max multicast snooping groups 1022

Total IGMP groups 0 (Learned 0, Static 0)
Total MLD groups 0 (Learned 0, Static 0)

Remaining allowed mcast snooping groups: 1022
```

## get switch interface

Use this command to get information about the interfaces, including the class of service (CoS) value, whether sFlow is enabled on the interface, and whether dynamically learned MAC addresses are persistent on the interface.

### Syntax

```
get switch interface
```

### Example output

```
S524DF4K15000024 # get switch interface

== [ port1 ]
name: port1      sflow-sampler: disabled    port-security:
default-cos: 0   sticky-mac: disable
== [ port2 ]
name: port2      sflow-sampler: disabled    port-security:
default-cos: 0   sticky-mac: disable
== [ port3 ]
name: port3      sflow-sampler: disabled    port-security:
default-cos: 0   sticky-mac: disable
...
```

## get switch ip-mac-binding

Use this command to get information about IP MAC binding.

### Syntax

```
get switch ip-mac-binding
```

### Example output

```
get switch ip-mac-binding

== [ 1 ]
seq-num: 1
```

## get switch ip-source-guard

Use this command to get information about the IP source-guard entries.

### Syntax

```
get switch ip-source-guard
```

## get switch ip-source-guard-violations

Use these commands to get source-guard violations.

### Syntax

```
get switch ip-source-guard-violations all
get switch ip-source-guard-violations interface <interface_name>
```

Variable	Description
all	Display all source-guard violations.
interface <interface_name>	Display source-guard violations for the specified interface.

## get switch lldp

Use this command to get information about LLDP.



## Syntax

```
get switch lldp {auto-isl-status | neighbors-detail <physical port name>| neighbors-summary
                | profile | settings | stats}
```

Variable	Description
auto-isl-status	Display statistics and status for the automatic ISL configuration.
neighbors-detail <physical port name>	Display details about a specific LLDP port.
neighbors-summary	Display a summary of LLDP neighbors.
profile	Display the name of available LLDP profiles.
settings	Display whether LLDP is enabled globally, the number of tx-intervals before the local LLDP data expires, the frequency of LLDP PDU transmission, how often the FortiSwitch transmits the first four LLDP packets when a link comes up, and the primary management interface advertised in LLDP and CDP PDUs.
stats	Display the number of packets transmitted, received, and discarded; the number of neighbors added, deleted, and expired; and the number of unknown TLVs.

## Example output

```
S524DF4K15000024 # get switch lldp profile
== [ default ]
name: default      802.1-tlvs:      802.3-tlvs:      med-tlvs: inventory-management network-policy
== [ default-auto-isl ]
name: default-auto-isl  802.1-tlvs:      802.3-tlvs:      med-tlvs:
== [ 1 ]
name: 1      802.1-tlvs:      802.3-tlvs:      med-tlvs: inventory-management network-policy
== [ Forti670i ]
name: Forti670i  802.1-tlvs:      802.3-tlvs:      med-tlvs: inventory-management network-policy

S524DF4K15000024 # get switch lldp settings
status          : enable
tx-hold         : 8
tx-interval     : 2000
fast-start-interval : 3
management-interface: internal
```

## get switch mac-limit-violations

Use this command to see the first MAC address that exceeded the learning limit for an interface or VLAN.

To enable the learning limit violation log for a FortiSwitch unit, see [config switch global on page 97](#).

## Syntax

```
get switch mac-limit-violations {all | interface <interface_name> | vlan <VLAN_ID>}
```

Variable	Description
all	Display the first MAC address that exceeded the learning limit on any interface or VLAN. An asterisk by the interface name indicates that the interface-based learning limit was exceeded. An asterisk by the VLAN identifier indicates the VLAN-based learning limit was exceeded.
interface <interface_name>	Display the first MAC address that exceeded the learning limit on a specific interface
vlan <VLAN_ID>	Display the first MAC address that exceeded the learning limit on a specific VLAN.

## Example output

```
S524DF4K16000028 # get switch mac-limit-violations all
```

Port	VLAN ID	MAC Address	Timestamp
port3*	5	00:00:01:00:00:01	2017-12-05 15:55:20
port15	9*	0a:c1:08:bf:cc:80	2017-12-05 15:55:44

```
S524DF4K16000028 # get switch mac-limit-violations interface port3
```

Port	VLAN ID	MAC Address	Timestamp
port3*	5	00:00:01:00:00:01	2017-12-05 15:55:20

```
S524DF4K16000028 # get switch mac-limit-violations vlan 9
```

Port	VLAN ID	MAC Address	Timestamp
port15	9*	0a:c1:08:bf:cc:80	2017-12-05 15:55:44

## get switch mirror status

Use this command to get information about the ERSPAN-auto mirror sessions of your FortiSwitch unit. To configure a packet mirror, see [config switch mirror on page 122](#).

## Syntax

```
get switch mirror status <session>
```

## Example output

```
# get switch mirror status flink.sniffer
```

```
flink.sniffer
```

```
Mode : ERSPAN-auto
Status : Inactive
Source-Ports:
  Ingress: port2, port3
  Egress : port8, port9
Used-by-ACLs : False
Auto-config-state : N/A
  Last-update : never
  Issues : None
  Collector-IP : 0.0.0.0
  Source-IP : N/A
  Source-MAC : N/A
Next-Hop :
  IP : N/A
  MAC : N/A
  Via-System-Interface : N/A
  VLAN : N/A
  Via-Switch-Interface : N/A
```

## get switch mld-snooping

Use this command to get the MLD-snooping settings of your FortiSwitch unit.

### Syntax

```
get switch mld-snooping {globals | group | static-group | status}
```

Variable	Description
globals	Display the global MLD-snooping configuration on the FortiSwitch unit.
group	Display a list of learned multicast groups.
static-group	Display the list of configured static groups.
status	Display the status of MLD-snooping VLANs and group

### Example output

```
S548DF5018000776 # get switch mld-snooping globals

aging-time : 300
leave-response-timeout: 10
query-interval : 125

S548DF5018000776 # get switch mld-snooping group

MLD-SNOOPING mcast-groups:
Max Entries: 1022

port VLAN GROUP Age-timeout MLD-Version
```

```
Total Number of Learned MLD groups: 0

S548DF5018000776 # get switch mld-snooping static-group

VLAN ID Group-Name Multicast-addr Member-interface
-----
S548DF5018000776 # get switch mld-snooping status

MLD-SNOOPING enabled vlans:
-----
40

MLD-Proxy enabled vlans:
-----
40

Max multicast snooping groups 1022

Total MLD groups 0 (Learned 0, Static 0)
Total IGMP groups 0 (Learned 0, Static 0)

Remaining allowed mcast snooping groups: 1022
```

get switch modules

Use this command to get information about the modules in your FortiSwitch unit.

Syntax

```
get switch modules {detail | limits | status | summary} [<port>]
```

Variable	Description
detail [<port>]	Display module details for a specific port, split port, or all available ports.
limits [<port>]	Display module limits for a specific port, split port, or all available ports.
status [<port>]	Display module status for a specific port, split port, or all available ports.
summary [<port>]	Display summary information of all modules for a specific port or all available ports and split ports.

Example output

```
S148FNTF20000098 # get switch modules detail port50

Port (port50)
identifier      SFP/SFP+
connector       Unk (0x00)
transceiver     1000-Base-T
```

```

encoding          8B/10B
Length Decode Common
    length_smf_1km  N/A
    length_cable    100 meter
SFP Specific
    length_smf_100m N/A
    length_50um_om2 N/A
    length_62um_om1 N/A
    length_50um_om3 N/A
vendor            FINISAR CORP.
vendor_oid        0x009065
vendor_pn         FCLF-8521-3
vendor_rev
vendor_sn         PU71L2H
manuf_date        08/15/2015

```

```
FS1E48T419000004 # get switch modules status port50
```

---

```

Port(port50)
temperature       23.957031 C
voltage           3.293100 volts
alarm_flags[0]    0x0000
warning_flags[0]  0x0000
laser_bias[0]     0.761600 mAmps
tx_power[0]       -2.246809 dBm
rx_power[0]       -2.926854 dBm
alarm_flags[1]    0x0000
warning_flags[1]  0x0000
laser_bias[1]     0.755200 mAmps
tx_power[1]       -1.993517 dBm
rx_power[1]       -3.300326 dBm
alarm_flags[2]    0x0000
warning_flags[2]  0x0000
laser_bias[2]     0.761600 mAmps
tx_power[2]       -2.105603 dBm
rx_power[2]       -2.486439 dBm
alarm_flags[3]    0x0000
warning_flags[3]  0x0000
laser_bias[3]     0.748800 mAmps
tx_power[3]       -2.128939 dBm
rx_power[3]       -2.641617 dBm
options           0x000F ( TX_DISABLE TX_FAULT RX_LOSS TX_POWER_LEVEL1 )
options_status    0x0008 ( TX_POWER_LEVEL1 )

```

## get switch network-monitor

Use this command to get information about network monitoring on the FortiSwitch unit.

### Syntax

```
get switch network-monitor {directed | settings}
```

Variable	Description
directed	List the static entries for network monitoring on the switch.
settings	Display the global settings for network monitoring on the switch.

## Example output

```
S524DF4K15000024 # get switch network-monitor directed
== [ 1 ]
id: 1
```

```
S524DF4K15000024 # get switch network-monitor settings
db-aging-interval : 3600
status           : disable
survey-mode      : disable
survey-mode-interval: 120
```

## get switch mrp

Use these commands to get information about the Media Redundancy Protocol (MRP) configuration.

## Syntax

```
get switch mrp {profile | settings}
```

Variable	Description
profile	List the available MRP profiles.
settings	Display the MRP settings.

## Example output

```
SR24DN4416000049 # get switch mrp profile
== [ 500ms ]
name: 500ms
== [ MRPprofile1 ]
name: MRPprofile1

SR24DN4416000049 # get switch mrp settings
status           : disable
role             : client
domain-id        : FFFFFFFF-FFFF-FFFF-FFFF-FFFFFFFFFFFFFF
domain-name      : domain1
vlan-id          : 1
priority         : 40960
ring-port1       : (null)
ring-port2       : (null)
profile-name     : 500ms
```

## get switch phy-mode

Use this command to find out which split ports have been configured. to configure split ports, see [config switch phy-mode](#) on page 129.

### Syntax

```
get switch phy-mode
```

### Example output

```
S524DF4K15000024 # get switch phy-mode
port29-phy-mode      : 1x40G
port30-phy-mode      : 1x40G
```

## get switch physical-port

Use this command to get information about the physical ports of your FortiSwitch unit. To configure physical ports, see [config switch physical-port](#) on page 131.

### Syntax

```
get switch physical-port
```

### Example output

```
S524DF4K15000024 # get switch physical-port
== [ port1 ]
name: port1      egress-drop-mode: enabled    link-status: down    status: up
== [ port2 ]
name: port2      egress-drop-mode: enabled    link-status: down    status: up
== [ port3 ]
name: port3      egress-drop-mode: enabled    link-status: down    status: up
...
```

## get switch poe inline

Use this command to get information about the system's power over Ethernet (PoE) functions.

### Syntax

```
get switch poe inline
```

## Example output

```
S524DF4K15000024 # get switch poe inline
```

```
Unit Power Budget: 10.00W
Unit Guard Band: 10.00W
Unit Power Consumption: 0.00W
Unit Poe Power Mode : First come first served based.
```

Interface	Status	State	Max-Power (W)	Power-consumption (W)	Class	Error
port1	Enabled	Searching	0.00	0.00		0
port2	Enabled	Searching	0.00	0.00		0
port3	Enabled	Searching	0.00	0.00		0
port4	Enabled	Searching	0.00	0.00		0
port5	Enabled	Searching	0.00	0.00		0
port6	Enabled	Searching	0.00	0.00		0
port7	Enabled	Searching	0.00	0.00		0
port8	Enabled	Searching	0.00	0.00		0
port9	Enabled	Searching	0.00	0.00		0
port10	Enabled	Searching	0.00	0.00		0
port11	Enabled	Searching	0.00	0.00		0
port12	Enabled	Searching	0.00	0.00		0
port13	Enabled	Searching	0.00	0.00		0
port14	Enabled	Searching	0.00	0.00		0
port15	Enabled	Searching	0.00	0.00		0
port16	Enabled	Searching	0.00	0.00		0
port17	Enabled	Searching	0.00	0.00		0
port18	Enabled	Searching	0.00	0.00		0
port19	Enabled	Searching	0.00	0.00		0
port20	Enabled	Searching	0.00	0.00		0
port21	Enabled	Searching	0.00	0.00		0
port22	Enabled	Searching	0.00	0.00		0
port23	Enabled	Searching	0.00	0.00		0
port24	Enabled	Searching	0.00	0.00		0

## get switch qos

Use this command to get information about the QoS configuration:

### Syntax

```
get switch qos (dot1p-map | ip-dscp-map | qos-policy)
```

Variable	Description
dot1p-map	List the available dot1p maps, as well as the CoS values.
ip-dscp-map	List the available DSCP maps.
qos-policy	List the available QoS policies.



## Example output

```
S524DF4K15000024 # get switch qos dot1p-map
== [ test1 ]
name: test1      priority-0: queue-2      priority-1: queue-0      priority-2: queue-1
priority-3: queue-3      priority-4: queue-4      priority-5: queue-5      priority-6: queue-6
priority-7: queue-7

S524DF4K15000024 # get switch qos ip-dscp-map
== [ m1 ]
name: m1

S524DF4K15000024 # get switch qos qos-policy
== [ default ]
name: default
== [ policy1 ]
name: policy1
```

## get switch raguard-policy

Use the following command to list the available IPv6 RA-guard policies. To create an IPv6 RA-guard policy, see [config switch raguard-policy on page 142](#).

### Syntax

```
get switch raguard-policy
```

## Example output

```
S524DF4K15000024 # get switch raguard-policy
== [ RApolicy1 ]
name: RApolicy1
```

## get switch security-feature

Use this command to display the security-feature settings. To configure security checks for incoming TCP/UDP packets, see [config switch security-feature on page 144](#).

### Syntax

```
get switch security-feature
```

## Example output

```
S524DF4K15000024 # get switch security-feature
```

```
sip-eq-dip           : enable
tcp-flag             : enable
tcp-port-eq          : enable
tcp-flag-FUP         : enable
tcp-flag-SF          : enable
v4-first-frag        : enable
udp-port-eq          : enable
tcp-hdr-partial      : enable
macsa-eq-macda       : enable
allow-mcast-sa       : enable
allow-sa-mac-all-zero: enable
```

## get switch static-mac

Use this command to display the static MAC addresses.

### Syntax

```
get switch static-mac
```

### Example output

```
S524DF4K15000024 # get switch static-mac

== [ 1 ]
seq-num: 1   interface: port5   mac: 00:21:cc:d2:76:72   vlan-id: 35
```

## get switch storm-control

Use this command to display storm control settings on your FortiSwitch unit. To configure storm control, see [config switch storm-control on page 147](#).

### Syntax

```
get switch storm-control
```

### Example output

```
S524DF4K15000024 # get switch storm-control

broadcast       : enable
rate            : 1000
unknown-multicast : enable
unknown-unicast  : enable
```

## get switch stp instance

Use this command to get information about STP instances on your FortiSwitch unit. To configure an STP instance, see [config switch stp instance on page 147](#).

### Syntax

```
get switch stp instance
```

### Example output

```
# get switch stp instance
== [ 0 ]
id: 0
== [ 1 ]
id: 1
```

## get switch stp settings

Use this command to get information about STP settings on your FortiSwitch unit. To configure STP settings, see [config switch stp settings on page 148](#).

### Syntax

```
get switch stp settings
```

### Example output

```
S524DF4K15000024 # get switch stp settings

forward-time      : 15
hello-time        : 5
max-age           : 20
max-hops          : 20
name              : region1
revision          : 1
status            : enable
```

## get switch trunk

Use this command to get information about which trunks on the FortiSwitch unit have been configured for link aggregation. To configure link aggregation, see [config switch trunk on page 149](#).

## Syntax

```
get switch trunk
```

## Example output

```
# get switch trunk
== [ 1 ]
name: 1 members:
== [ port3 ]
member-name: port3
== [ port10 ]
member-name: port10
== [ port1 ]
member-name: port1
```

# get switch virtual-wire

Virtual wire allows you to forward traffic between two ports with minimal filtering or packet modifications. To configure a virtual wire, see [config switch virtual-wire on page 152](#).

## Syntax

```
get switch virtual-wire
```

## Example output

```
S524DF4K15000024 # get switch virtual-wire
== [ 1 ]
name: 1
```

# get switch vlan

Use this command to get information about VLANs on the FortiSwitch unit. To configure a VLAN, see [config switch vlan on page 153](#).

## Syntax

```
get switch vlan
```

## Example output

```
# get switch vlan
```

```
== [ 1 ]
id: 1 private-vlan-type: primary isolated-vlan: 2 community-vlans: 3
== [ 2 ]
id: 2 private-vlan-type: isolated sub-VLAN primary-vlan: 1
== [ 3 ]
id: 3 private-vlan-type: community sub-VLAN primary-vlan: 1
```

## get system accprofile

Use this command to view a list of all the system administration access groups. To add an access profile group, see [config system accprofile on page 162](#).

### Syntax

```
get system admin accprofile
```

### Example output

```
S524DF4K15000024 # get system accprofile

== [ prof_admin ]
name: prof_admin
== [ profile1 ]
name: profile1
```

## get system admin list

Use this command to view a list of all the current administration sessions.

### Syntax

```
get system admin list
```

### Example output

```
# get system admin list
```

username	local	device	remote	started
admin	sshv2	port1:172.20.120.148:22	172.20.120.16:4167	2006-08-09 12:24:20
admin	https	port1:172.20.120.148:443	172.20.120.161:56365	2006-08-09 12:24:20
admin	https	port1:172.20.120.148:443	172.20.120.16:4214	2006-08-09 12:25:29

Variable	Description
username	Name of the admin account for this session
local	The protocol this session used to connect to the system.
device	The interface, IP address, and port used by this session to connect to the system.
remote	The IP address and port used by the originating computer to connect to the system.
started	The time the current session started.

## get system admin status

Use this command to view the status of the currently logged in admin and their session. To configure an administrator account, see [config system admin on page 163](#).

### Syntax

```
get system admin status
```

### Example Output

```
# get system admin status
```

```
username: admin
login local: sshv2
login device: port1:172.20.120.148:22
login remote: 172.20.120.16:4167
login vdom: root
login started: 2006-08-09 12:24:20
current time: 2006-08-09 12:32:12
```

Variable	Description
username	Name of the admin account currently logged in.
login local	The protocol used to start the current session.
login device	The login information from the FortiSwitch including interface, IP address, and port number.
login remote	The computer the user is logging in from including the IP address and port number.
login vdom	The virtual domain the admin is current logged into.
login started	The time the current session started.
current time	The current time of day on the system

## get system arp

Use this command to view the ARP table entries on the FortiSwitch unit. To manually add ARP table entries to the FortiSwitch unit, see [config system arp-table on page 172](#).

### Syntax

```
get system arp
```

### Example output

```
S524DF4K15000024 # get system arp
```

Address	Age (min)	Hardware Addr	Interface
10.105.16.1	0	90:6c:ac:15:2f:94	mgmt
11.1.1.100	-	00:00:5e:00:01:05	vlan-8 (proxy)

## get system arp-table

Use this command to view the ARP tables on the FortiSwitch unit.

### Syntax

```
get system arp-table
```

### Example output

```
# get system arp-table
== [ 1 ]
id: 1 interface: internal ip: 10.10.10.10 mac: 01:02:03:04:05:aa
```

## get system bug-report

Use this command to get information about configuration related to bug reporting. To configure a custom email relay for sending problem reports to Fortinet customer support, see [config system bug-report on page 173](#).

### Syntax

```
get system bug-report
```

## Example output

```
S524DF4K15000024 # get system bug-report

auth           : no
mailto         : fortiswitch@fortinet.com
password       : (null)
server        : fortinet.com
username       : bug_report
username-smtp  : bug_report
```

## get system certificate

Use this command to display configuration related to central management service:

### Syntax

```
get system certificate (ca | crl | local | oscp | remote)
```

Variable	Description
ca	List available CA certificates.
crl	Display the certificate revocation lists available.
local	List available local keys and certificates.
ocsp	Display the OCSP (Online Certificate Status Protocol) server certificate, the action to take when the server is unavailable, and the URL to the OCSP server.
remote	List available remote certificates.

## Example output

```
S524DF4K15000024 # get system certificate ca
== [ Fortinet_CA ]
name: Fortinet_CA
== [ Fortinet_CA2 ]
name: Fortinet_CA2
== [ Entrust_802.1x_CA ]
name: Entrust_802.1x_CA
== [ Entrust_802.1x_L1K_CA ]
name: Entrust_802.1x_L1K_CA
== [ Entrust_802.1x_G2_CA ]
name: Entrust_802.1x_G2_CA

S524DF4K15000024 # get system certificate crl
== [ 1 ]
name: 1
```



```
S524DF4K15000024 # get system certificate local
== [ Fortinet_Factory ]
name: Fortinet_Factory
== [ Fortinet_Firmware ]
name: Fortinet_Firmware
== [ Entrust_802.1x ]
name: Entrust_802.1x

S524DF4K15000024 # get system certificate ocsp
cert          : (null)
unavail-action : revoke
url           : (null)

S524DF4K15000024 # get system certificate remote
== [ 1 ]
name: 1
```

## get system cmdb status

Use this command to view information about configuration management database (CMDB) on the FortiSwitch unit.

### Syntax

```
get system cmdb status
```

Variable	Description
version	Version of the CMDB software.
owner id	Process identifier of the CMDB server daemon.
update index	The updated index shows how many changes have been made in the CMDB.
config checksum	The configuration file version used by FortiManager.
last request pid	The last process to access the CMDB.
last request type	Type of the last attempted access of the CMDB.
last request	The number of the last attempted access of the CMDB.

### Example output

```
# get system cmdb status
version: 1
owner id: 18
update index: 6070
config checksum: 12879299049430971535
last request pid: 68
last request type: 29
last request: 78
```

## get system console

Use this command to get information about the console connection. To configure the console, see [config system console](#) on page 177.

### Syntax

```
get system console
```

### Example output

```
S524DF4K15000024 # get system console

baudrate      : 115200
mode          : line
output        : more
```

## get system dns

Use this command to get information about the DNS settings. To configure DNS, see [config system dns](#) on page 184.

### Syntax

```
get system dns
```

### Example output

```
S524DF4K15000024 # get system dns

primary       : 208.91.112.53
secondary     : 208.91.112.52
domain        : (null)
ip6-primary   : ::
ip6-secondary : ::
dns-cache-limit : 5000
dns-cache-ttl  : 1800
cache-notfound-responses: disable
source-ip     : 0.0.0.0
```

## get system flow-export

Use this command to display the flow-export configuration. To configure flow export, see [config system flow-export](#) on page 186.

## Syntax

```
get system flow-export
```

## Example output

```
S524DF4K15000024 # get system flow-export
aggregates:
collector-ip      : 0.0.0.0
collector-port    : 0
format           : ipfix
identity         : 0x00000000
level            : ip
max-export-pkt-size : 512
timeout-general   : 3600
timeout-icmp      : 300
timeout-max       : 604800
timeout-tcp       : 3600
timeout-tcp-fin   : 300
timeout-tcp-rst   : 120
timeout-udp       : 300
transport        : tcp
```

## get system flow-export-data

Use this command to display the flow-export data. To configure flow export, see [config system flow-export on page 186](#).

## Syntax

```
get system flow-export-data flows {all | <count>} {ip | subnet | mac | all} <switch_
interface_name>
get system flow-export-data flows-raw {all | <count>} {ip | subnet | mac | all} <switch_
interface_name>
get system flow-export-data statistics
```

**NOTE:** Layer-2 flows for netflow 1 and netflow 5 are not supported. For the output of the `get system flow-export-data statistics` command, the Incompatible Type field displays how many flows are not exported because they are not supported.

Variable	Description
flows {all   <count>} {ip   subnet   mac   all} <switch_interface_name>	Display the specified number of records or all records of flow data for the specified IP address, subnet (class IP address and netmask), MAC address, or all.
flows-raw {all   <count>} {ip   subnet   mac   all} <switch_interface_name>	Display the specified number of records or all records of raw flow data for the specified IP address, subnet (class IP address and netmask), MAC address, or all.
statistics	Display the statistics for the flow data.

## get system flan-cloud

Use this command to display the configuration for FortiLAN Cloud management. To configure FortiLAN Cloud management, see [config system flan-cloud on page 189](#).

### Syntax

```
get system flan-cloud
```

### Example output

```
S524DF4K15000024 # get system flan-cloud

interval      : 3
name          : fortiswitch-dispatch.forticloud.com
port          : 443
status        : enable
```

## get system flan-cloud-mgr connection-info

Use this command to check your connection to FortiLAN Cloud.

### Syntax

```
get system flan-cloud-mgr connection-info
```

### Example output

```
S148EN5919002268 # get system flan-cloud-mgr connection-info

Service Name:      : FortiLAN Cloud
Dispatch Service   : IP= 66.35.19.50
SSL verify Code    : Wait ...
Access Service     : 0 - Checking Cloud Registration ..
```

## get system global

Use this command to get the global settings of your FortiSwitch unit. To configure global settings, [config system global on page 189](#).

## Syntax

```
get system global
```

## Example output

```
S524DF4K15000024 # get system global

802.1x-ca-certificate: Entrust_802.1x_CA
802.1x-certificate   : Entrust_802.1x
admin-concurrent     : enable
admin-https-pki-required: disable
admin-https-ssl-versions: tlsv1-1 tlsv1-2
admin-lockout-duration: 60
admin-lockout-threshold: 3
admin-port           : 80
admin-scp            : disable
admin-server-cert    : Fortinet_Firmware
admin-sport          : 443
admin-ssh-grace-time : 120
admin-ssh-port       : 22
admin-ssh-v1         : disable
admin-telnet-port    : 23
admintimeout         : 5
allow-subnet-overlap : disable
asset-tag            : (null)
cfg-save             : automatic
csr-ca-attribute     : enable
daily-restart        : disable
detect-ip-conflict   : enable
dst                  : enable
gui-lines-per-page   : 50
hostname             : S524DF4K15000024
image-rotation        : disable
kernel-crashlog      : enable
language             : english
ldapconntimeout      : 500
radius-port          : 1812
refresh              : 0
remoteauthtimeout    : 5
revision-backup-on-logout: enable
revision-backup-on-upgrade: enable
strong-crypto        : disable
switch-mgmt-mode     : local
timezone             : (GMT-8:00)Pacific Time (US&Canada) .
user-server-cert     : Fortinet_Factory
```

## get system info admin ssh

Use this command to display information about the SSH configuration on the FortiSwitch unit such as:

- the SSH port number
- the interfaces with SSH enabled
- the hostkey DSA fingerprint
- the hostkey RSA fingerprint

## Syntax

```
get system info admin ssh
```

## Example output

```
# get system info admin ssh
SSH v2 is enabled on port 22
SSH is enabled on the following 1 interfaces:
mgmt
SSH hostkey DSA fingerprint = cd:e1:87:70:bb:f0:9c:7d:e3:7b:73:f7:44:23:a5:99
SSH hostkey RSA fingerprint = c9:5b:49:1d:7c:ba:be:f3:9d:39:33:4d:48:9d:b8:49
```

# get system info admin status

Use this command to display administrators that are logged into the FortiSwitch unit.

## Syntax

```
get system info admin status
```

Variable	Description
Index	The order the administrators logged in.
User name	The name of the user account logged in.
Login type	Which interface was used to log in.
From	The IP address this user logged in from.

## Example output

```
Index User name Login type From
0 admin CLI ssh(172.20.120.16)
1 admin WEB 172.20.120.16
```

# get system interface physical

Use this command to list information about the physical network interfaces.

## Syntax

```
get system interface physical
```

## Example output

```
S524DF4K15000024 # get system interface physical

== [onboard]
  ==[internal]
    mode: static
    ip: 0.0.0.0 0.0.0.0
    ipv6: ::/0
    status: up
    speed: n/a (Duplex: n/a)
    rx : 0 bytes  0 packets
    tx : 8405158 bytes  160742 packets
  ==[mgmt]
    mode: dhcp
    ip: 10.105.19.3 255.255.252.0
    ipv6: ::/0
    status: up
    speed: 1000Mbps (Duplex: full)
    rx : 11558117 bytes  85986 packets
    tx : 7048800 bytes  39380 packet
```

## get system ipv6-neighbor-cache

Use this command to list information about the IPv6 neighbor cache table. To configure the IPv6 neighbor cache table, see [config system ipv6-neighbor-cache on page 206](#).

## Syntax

```
get system ipv6-neighbor-cache
```

## get system link-monitor

Use this command to list information about the physical network interfaces. To configure the link health monitor, see [config system link-monitor on page 207](#).

## Syntax

```
get system link-monitor
```

## get system location

Use this command to get information about the location table used by LLDP-MED for enhanced 911 emergency calls. To configure a location table, see [config system location on page 208](#).

### Syntax

```
get system location
```

### Example output

```
S548DF5018000776 # get system location
== [ Fortinet ]
name: Fortinet
```

## get system ntp

Use this command to get information about the NTP settings. To configure an NTP server, see [config system ntp on page 212](#).

### Syntax

```
get system ntp
```

### Example output

```
ntpserver:
== [ 1 ]
id: 1
== [ 2 ]
id: 2
ntpsync : enable
source-ip : 0.0.0.0
syncinterval : 1
```

## get system password-policy

Use this command to view the password policy. To create a password policy, see [config system password-policy on page 213](#).

### Syntax

```
get system password-policy
```



## Example output

```
# get system password-policy
status : enable
apply-to : admin-password
minimum-length : 8
min-lower-case-letter: 2
min-upper-case-letter: 2
min-non-alphanumeric: 0
min-number : 2

        change-4-characters : disable

expire-status : disable
```

## get system performance firewall statistics

Use this command to display a list of traffic types (such as browsing, email, and DNS) and the number of packets and number of payload bytes accepted by the firewall for each type since the system was restarted.

### Syntax

```
get system performance firewall statistics
```

### Example output

```
get system performance firewall statistics
getting traffic statistics...
Browsing: 623738 packets, 484357448 bytes
DNS: 5129187383836672 packets, 182703613804544 bytes
E-Mail: 23053606 packets, 2 bytes
FTP: 0 packets, 0 bytes
Gaming: 0 packets, 0 bytes
IM: 0 packets, 0 bytes
Newsgroups: 0 packets, 0 bytes
P2P: 0 packets, 0 bytes
Streaming: 0 packets, 0 bytes
TFTP: 654722117362778112 packets, 674223966126080 bytes
VoIP: 16834455 packets, 10 bytes
Generic TCP: 266287972352 packets, 8521215115264 bytes
Generic UDP: 0 packets, 0 bytes
Generic ICMP: 0 packets, 0 bytes
Generic IP: 0 packets, 0 bytes
```

## get system performance status

Use this command to display FortiSwitch CPU usage, memory usage, network usage, sessions, virus, IPS attacks, and system up time.

### Syntax

```
get system performance status
```

### Example output

```
S524DF4K15000024 # get system performance status
```

```
CPU states: 0% user 16% system 0% nice 84% idle
```

```
Memory states: 10% used
```

```
Average network usage: 0 kbps in 1 minute, 0 kbps in 10 minutes, 0 kbps in 30 minutes
```

```
Uptime: 0 days, 22 hours, 5 minutes
```

Variable	Description
CPU states	The percentages of CPU cycles used by user, system, nice and idle categories of processes. These categories are: user -CPU usage of normal user-space processes system -CPU usage of kernel nice - CPU usage of user-space processes having other-than-normal running priority idle - Idle CPU cycles Adding user, system, and nice produces the total CPU usage as seen on the CPU widget on the web-based system status dashboard.
Memory states	The percentage of memory used.
Average network usage	The average amount of network traffic in kbps in the last 1, 10 and 30 minutes.
Uptime	How long since the system has been restarted.

## get system performance top

Use this command to display the list of processes running on the system (similar to the Linux `top` command).

The following commands are available when `get system performance top` is running:

- Press Q or Ctrl+C to quit.
- Press P to sort the processes by the amount of CPU that the processes are using.
- Press M to sort the processes by the amount of memory that the processes are using.

## Syntax

```
get system performance top [<delay_int>] <max_lines_int>]]
```

Variable	Description
<delay_int>	The delay, in seconds, between updating the process list. The default is 5 seconds.
<max_lines_int>	The maximum number of processes displayed in the output. The default is 20 lines.

## Example output

```
S524DF4K15000024 # get system performance top
```

```
Run Time: 0 days, 22 hours and 13 minutes
```

```
0U, 7S, 93I; 1978T, 1684F
```

newcli	3424	R <	0.1	0.4
pyfcgid	770	S	0.0	0.7
pyfcgid	898	S	0.0	0.7
pyfcgid	899	S	0.0	0.7
cmdbsvr	610	S	0.0	0.6
httpsd	771	S	0.0	0.6
httpsd	1998	S	0.0	0.5
httpsd	901	S	0.0	0.5
miglogd	773	S	0.0	0.5
initXXXXXXXXXX	1	S	0.0	0.5
newcli	1040	S <	0.0	0.5
ipconflict	799	S	0.0	0.5
httpsd	900	S	0.0	0.4
fsmgrd	806	S	0.0	0.4
lldpmedd	800	S	0.0	0.4
eap_proxy	804	S	0.0	0.4
authd	803	S	0.0	0.4
router_launcher	768	S	0.0	0.4
sshd	790	S	0.0	0.4
stpd	795	S	0.0	0.4

## get system schedule group

Use this command to list available schedule groups for when an access control list (ACL) will be active. To configure a schedule group, see [config system schedule group on page 215](#).

## Syntax

```
get system schedule group
```

## Example output

```
S548DF5018000776 # get system schedule group
== [ group1 ]
```

```
name: group1
```

## get system schedule onetime

Use this command to list available one-time schedules for when an access control list (ACL) will be active. To configure a one-time schedule, see [config system schedule onetime on page 215](#).

### Syntax

```
get system schedule onetime
```

### Example output

```
S548DF5018000776 # get system schedule onetime
== [ schedule1 ]
name: schedule1
```

## get system schedule recurring

Use this command to list schedules for when an access control list (ACL) will be active every week. To configure a recurring schedule, see [config system schedule recurring on page 216](#).

### Syntax

```
get system schedule recurring
```

### Example output

```
S548DF5018000776 # get system schedule recurring
== [ schedule2 ]
name: schedule2
```

## get system settings

Use this command to get information about equal cost multi-path (ECMP) routing. To configure ECMP routing, see [config system settings on page 217](#).

### Syntax

```
get system settings
```

## Example output

```
#get system settings
v4-ecmp-mode : source-ip-based
```

## get system sflow

Use this command to display the sFlow settings. To configure sFlow, see [config system sflow on page 218](#).

### Syntax

```
get system sflow
```

## Example output

```
S524DF4K15000024 # get system sflow
collector-ip       : 0.0.0.0
collector-port     : 6343
```

## get system sniffer-profile capture

Use this command to display the packet capture for a specific packet-capture profile. To create a packet-capture profile, see [config system sniffer-profile on page 218](#).

### Syntax

```
get system sniffer-profile capture <profile_name>
```

## get system sniffer-profile summary

Use this command to display the status of all configured packet-capture profiles. To create a packet-capture profile, see [config system sniffer-profile on page 218](#).

### Syntax

```
get system sniffer-profile summary
```

## Example output

```
S524DF4K15000024 # get system sniffer-profile summary
```

Maximum memory available for storing packet-capture: 100 MB.

Name	Status	Pkt-Count	Snap Len	Size (KB)	Filter
=====					
profile1	Stop	No Capture	100	0.00	none

## get system snmp sysinfo

Use this command to get information about your system's SNMP settings. To configure the SNMP agent, see [config system snmp sysinfo on page 222](#).

### Syntax

```
get system snmp sysinfo
```

### Example output

```
S524DF4K15000024 # get system snmp sysinfo
```

```
contact-info      : (null)
description       : (null)
engine-id        : (null)
location         : (null)
status           : disable
trap-high-cpu-threshold: 80
trap-log-full-threshold: 90
trap-low-memory-threshold: 80
trap-temp-alarm-threshold: 60
trap-temp-warning-threshold: 50
```

## get system source-ip status

Use this command to list defined source IP addresses.

### Syntax

```
get system source-ip status
```

### Example output

```
# get sys source-ip status
The following services force their communication to use
a specific source IP address:

service=NTP source-ip=172.18.19.101
```

```
service=DNS source-ip=172.18.19.101
vdom=root service=RADIUS name=server-pc25 source-ip=10.1.100.101
vdom=root service=TACACS+ name=tac_plus_pc25 source-ip=10.1.100.101
vdom=root service=FSAE name=pc26 source-ip=172.18.19.101
vdom=V1 service=RADIUS name=pc25-Radius source-ip=172.16.200.101
vdom=V1 service=TACACS+ name=pc25-tacacs+ source-ip=172.16.200.101
vdom=V1 service=FSAE name=pc16 source-ip=172.16.200.101
```

## get system startup-error-log

Use this command to display information about system startup errors. This command only displays information if an error occurs when the system starts up.

### Syntax

```
get system startup-error-log
```

## get system status

Use this command to display FortiSwitch status information including:

- firmware version, build number, and branch point
- serial number
- host name
- system time and date and related settings

### Syntax

```
get system status
```

### Example output

```
S524DF4K15000024 # get system status

Version: FortiSwitch-524D-FPOE v3.6.2,build0382,170829 (GA)
Serial-Number: S524DF4K15000024
BIOS version: 04000013
System Part-Number: P18045-04
Burn in MAC: 08:5b:0e:f1:95:e4
Hostname: S524DF4K15000024
Distribution: International
Branch point: 382
System time: Tue Sep 12 16:16:40 2017
```

## get test

Use this command to display information about applications on this FortiSwitch unit:

### Syntax

```
get test {dnsproxy | fpmdd | radiusd | sflowd | snmpd} <test_level_int>
```

Variable	Description
{dnsproxy   fpmdd   radiusd   sflowd   snmpd}	<p>Set the application to be tested.</p> <p>Tests can be run on the following applications:</p> <ul style="list-style-type: none"><li>• <code>dnsproxy</code> — DNS proxy</li><li>• <code>fpmdd</code> — FPM daemon</li><li>• <code>radiusd</code> — RADIUS daemon</li><li>• <code>sflowd</code> — sFlow daemon</li><li>• <code>snmpd</code> — SNMP daemon</li></ul>
<test_level_int>	Set the level for the test.

### Example output

```
S524DF4K15000024 # get test fpmdd 1
ROUTE_V4_ADD          : 9
INTF_V4_ADDR_ADD      : 14
ROUTE_V4_MGMT_FWD_DISABLED : 4
ROUTE_ADD_INVALID_FAMILY : 3
ROUTE_ADD_INET127     : 1

S524DF4K15000024 # get test sflowd 1
cmf sflow collector:0.0.0.0:[6343]
sflowd collector:0.0.0.0:[6343]
```

## get user group

Use this command to list all user groups. To add a user group, see [config user group on page 226](#).

### Syntax

```
get user group
```

### Example output

```
S524DF4K15000024 # get user group
```



```
== [ group1 ]
name: group1
== [ radgroup ]
name: radgroup
```

## get user ldap

Use this command to list LDAP users. To add an LDAP user, see [config user ldap on page 227](#).

### Syntax

```
get user ldap
```

## get user local

Use this command to list local users. To add a local user, see [config user local on page 229](#).

### Syntax

```
get user local
```

### Example output

```
S524DF4K15000024 # get user local

== [ user1 ]
name: user1
```

## get user radius

Use this command to list RADIUS users. To add a RADIUS user, see [config user radius on page 232](#).

### Syntax

```
get user radius
```

### Example output

```
S524DF4K15000024 # get user radius

== [ serve2 ]
```

```
name: serve2
== [ radone ]
name: radone
```

## get user setting

Use this command to get information about all the system's user settings.

### Syntax

```
get user setting
```

### Example output

```
S524DF4K15000024 # get user setting

auth-blackout-time   : 0
auth-cert             : (null)
auth-http-basic       : disable
auth-invalid-max      : 5
auth-multi-group      : enable
auth-ports:
  == [ 1 ]
  id: 1
auth-secure-http      : disable
auth-timeout          : 5
auth-timeout-type     : idle-timeout
auth-type              : http https ftp telnet
```

## get user tacacs+

Use this command to get information about tacacs+ users.

### Syntax

```
get user tacacs+
```

### Example output

```
S524DF4K15000024 # get user tacacs+

== [ tacserver ]
name: tacserver
```

# sleep

Use this command to add a delay in a script.

## Syntax

```
sleep <1-172800 seconds>
```

## Example

```
sleep 10
```

## Appendix: FortiSwitch QoS template

The following is a template for setting up QoS on a FortiSwitch unit:

```
config switch qos dot1p-map
    edit "voice-dot1p"
        set priority-0 queue-4
        set priority-1 queue-4
        set priority-2 queue-3
        set priority-3 queue-2
        set priority-4 queue-3
        set priority-5 queue-1
        set priority-6 queue-2
        set priority-7 queue-2
    next
end

config switch qos ip-dscp-map
    edit "voice-dscp"
        config map
            edit "1"
                set cos-queue 1
                set value 46
            next
            edit "2"
                set cos-queue 2
                set value 24,26,48,56
            next
            edit "5"
                set cos-queue 3
                set value 34
            next
        end
    next
end

config switch qos qos-policy
    edit "default" // you can ignore this portion, this is default policy
        config cos-queue
            edit "queue-0"
            next
            edit "queue-1"
            next
            edit "queue-2"
            next
            edit "queue-3"
            next
            edit "queue-4"
            next
            edit "queue-5"
            next
            edit "queue-6"
            next
        end
    end
end
```

```
                edit "queue-7"
                next
            end
        set schedule round-robin
    next
    edit "voice_egr_policy"
        config cos-queue
            edit "queue-0"
            next
            edit "queue-1"
                set weight 0
            next
            edit "queue-2"
                set weight 6
            next
            edit "queue-3"
                set weight 37
            next
            edit "queue-4"
                set weight 12
            next
            edit "queue-5"
            next
            edit "queue-6"
            next
            edit "queue-7"
            next
        end
    set schedule weighted
    next
end

edit "port5"
    ...
    set trust-dot1p-map " voice-dot1p "
    set trust-ip-dscp-map " voice-dscp "
next
edit "port6"
    ...
    set trust-dot1p-map " voice-dot1p "
    set trust-ip-dscp-map " voice-dscp "
next
edit "port7"
    ...
    set trust-dot1p-map " voice-dot1p "
    set trust-ip-dscp-map " voice-dscp "
next
end

edit "port14"
    ...
    set qos-policy "voice_egr_policy"
end
```



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